



LWD MEMORY LOG

Gamma Ray

Scale:		Company: Noble Energy			
1:240 MD		Well: Wells Ranch BB09-626			
Depth Reference:		Field: Wattenberg			
Driller's Depth		County: Weld		Country: United States	
		State: Colorado			
Status:	Surface Location:			Other Services:	
Final Print		Latitude:		040° 24' 33.336" N	
API No: 05-123-44953		Longitude:		104° 24' 44.748" W	
Job ID: 109418339				Directional	
Permanent Datum (P.D.): Ground Level		Elevation:	4676.00 ft	Elev. KB:	N/A
Log Measured From: Rig Floor		Above P.D.	30.00 ft	Elev. DF:	4706.00 ft
				Elev. GL:	4676.00 ft
Dates	Interval Drilled			Magnetic Field Reference	
Date From: 2018-10-02	Top: (ft)	1945.00	Azi Reference North: Grid		Dip Angle: (deg)
Date To: 2018-10-05	Bottom: (ft)	16983.00	Total Magnetic Field Strength: (nT)		52199
Spud Date: 2018-10-01			Mag to Reference North Correction: (deg)		7.20
Borehole Record			Casing Record		
Hole Size (in)	From (ft)	To (ft)	Size (in)	Weight (lb/ft)	From (ft)
13.500	30.00	1945.00	9.625	36.00	30.00
8.500	1945.00	16983.00			
Mud Record					
Type	From (ft)	To (ft)	Hole Size (in)	Interval (ft)	Inc Az (Start) Inc Az (End)
Oil Based Mud	1945.00	16983.00	8.500	15038.00	0.47 351.29 89.58 271.22
Acquisition System					
Baker Hughes Cadence DeliverableGen	RT 4.2	1.0.8107.2	Rig: Contractor: District:	H&P 321 Helmerich & Payne Drilling Co RMD	Other Unit: H&B

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Log Run Summary

Run No	Bit Run No.	Bit Size (in)	Bit Type	Bit Gauge Length (in)	Assembly Type	Logged Interval		Bit Depth Interval		Date / Time		Circ. Hours
						Top	Bottom	From	To	Start Logging	End Logging	
						(ft)	(ft)	(ft)	(ft)			
1	2	8.500	PDC	3.50	AutoTrak Curve	1945.00	16969.00	1945.00	16983.00	2018-10-02 22:30	2018-10-05 08:50	51.59

Crew

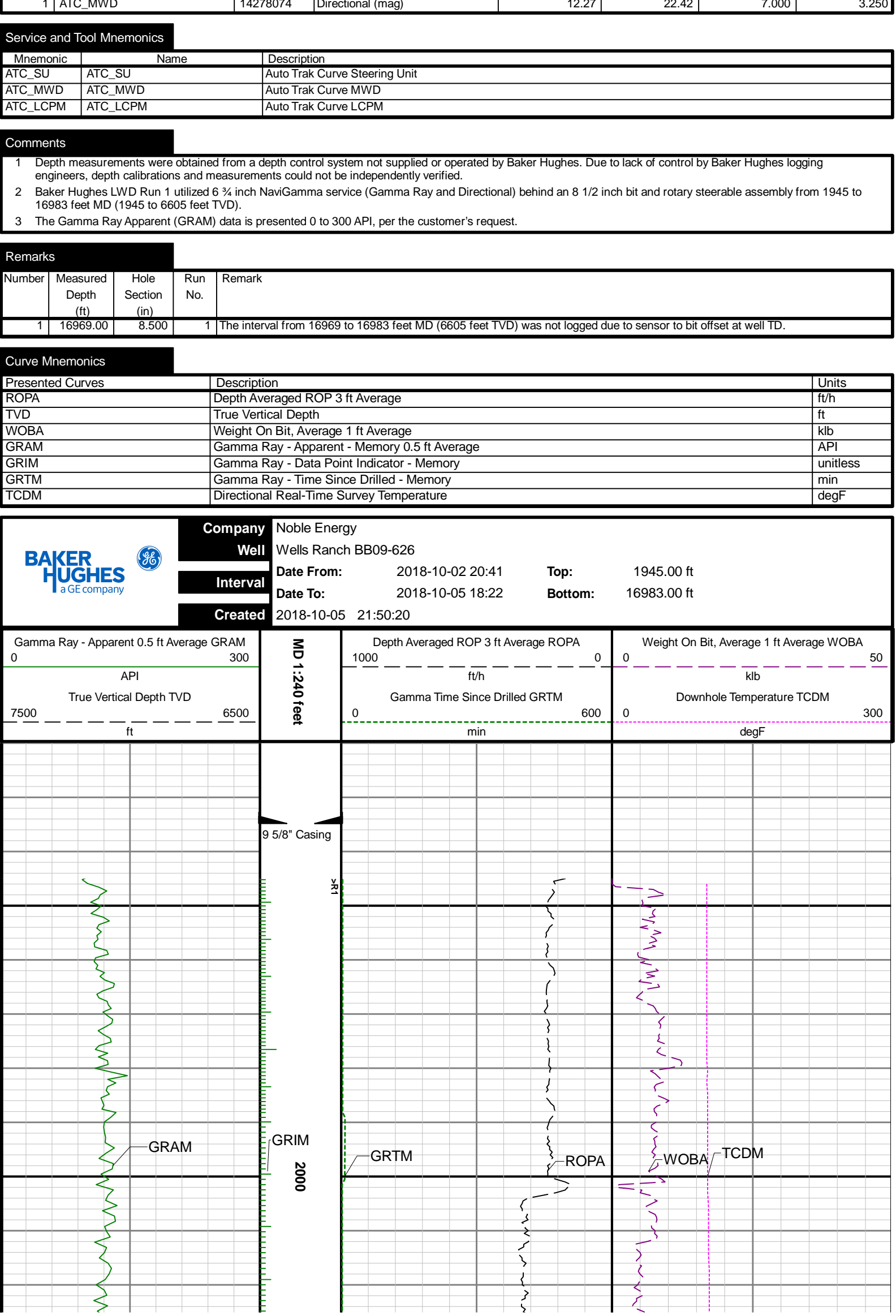
Name	Arrive Wellsite	Depart Wellsite	Name	Arrive Wellsite	Depart Wellsite	Name	Arrive Wellsite	Depart Wellsite
Tien Bui	2018-10-01	2018-10-06						

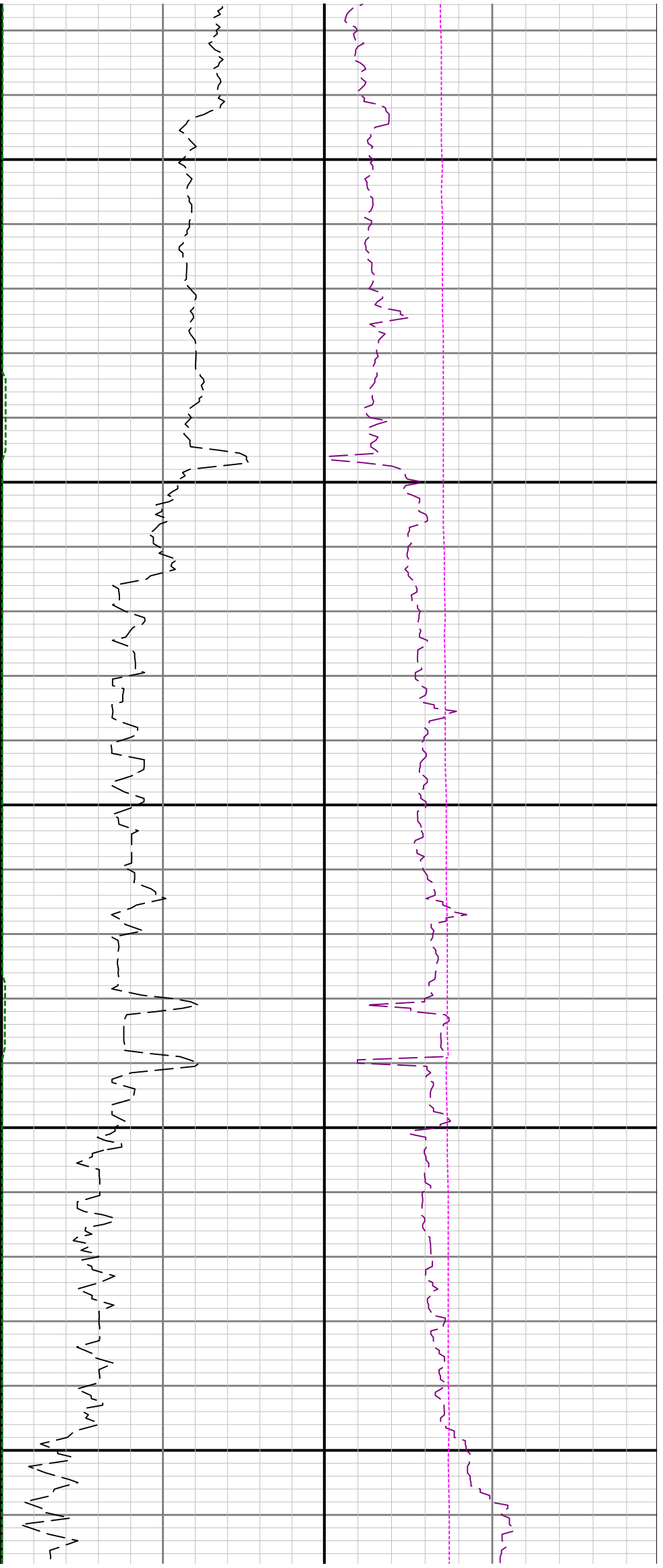
Mud Properties Record

Date / Time	Run No.	Measured Depth (ft)	Mud Type	Density (ppg)	Viscosity (cP)	pH	Fluid Loss (cm3)	Oil / Water	Source	Total Chlorides (ppm)	K+ (%)
2018-10-02 08:45	1	1945.00	Oil Based Mud	9.3	11	N/A	10.0	81/19	Active Pit	25000	0.00
2018-10-03 05:12	1	4350.00	Oil Based Mud	9.5	14	N/A	21.8	79.8/20.2	Active Pit	23000	0.00
2018-10-03 09:04	1	5352.00	Oil Based Mud	9.3	11	N/A	18.2	81.2/18.8	Active Pit	26000	0.00
2018-10-04 08:55	1	11217.00	Oil Based Mud	9.5	11	N/A	20.1	84.1/15.9	Active Pit	25500	0.00

Equipment and Service Data

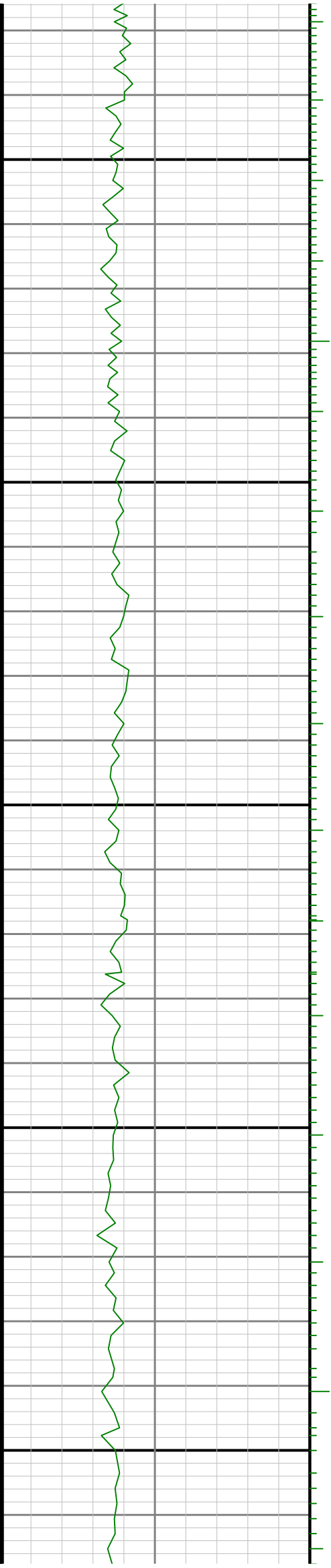
Run No.	Tool	Serial Number	Measurement	Sensor Offset (ft)	Bit Offset (ft)	Max O.D. (in)	Min I.D. (in)
1	ATC_SU	12296375	Near Bit VSS	5.93	6.73	7.000	4.330
1	ATC_SU	12296375	Near Bit Inclination	5.93	6.73	7.000	4.330
1	ATC_MWD	14278074	Gamma (single)	2.76	12.91	7.000	3.250
1	ATC_MWD	14278074	Directional (mag)	12.27	22.42	7.000	3.250

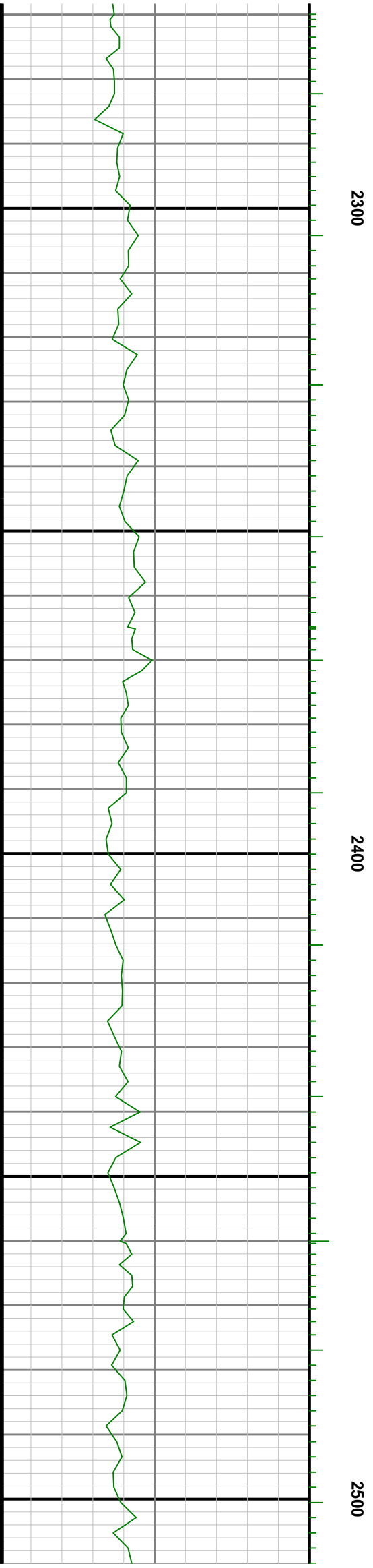
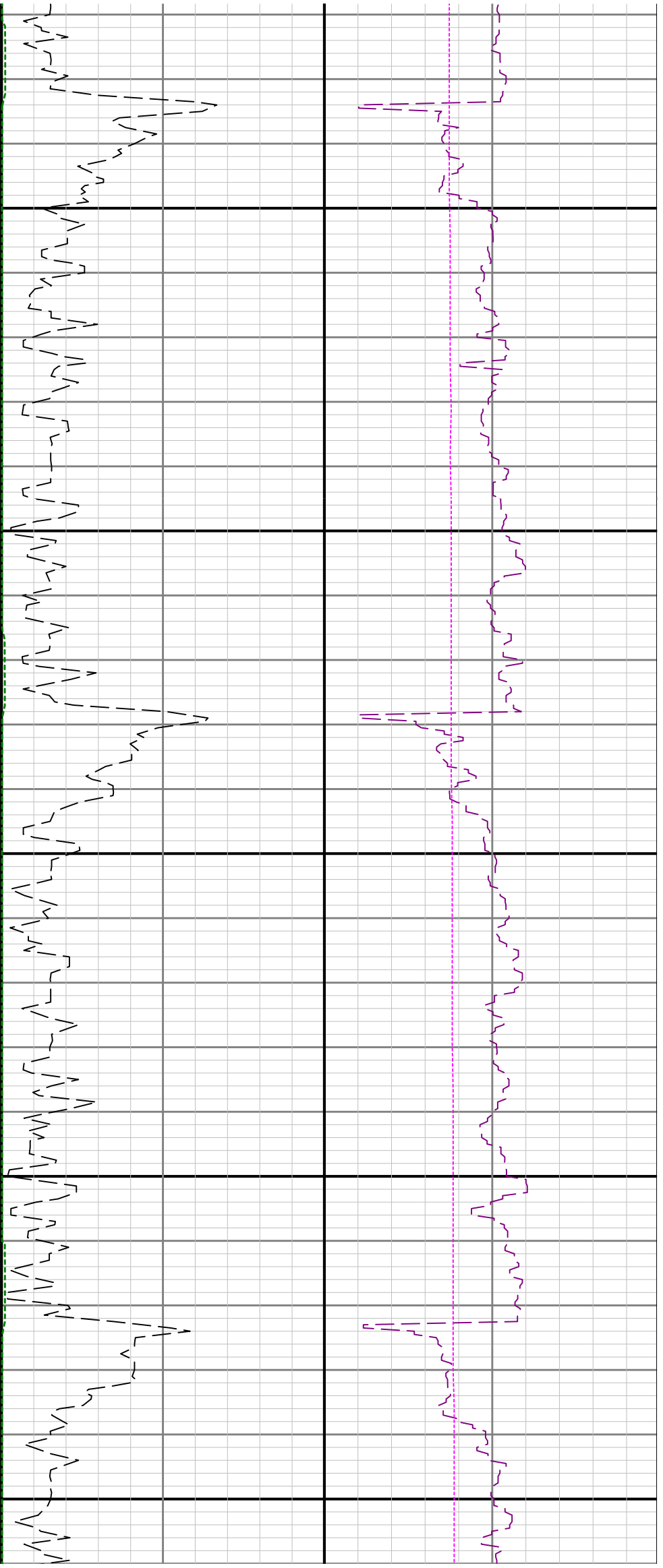


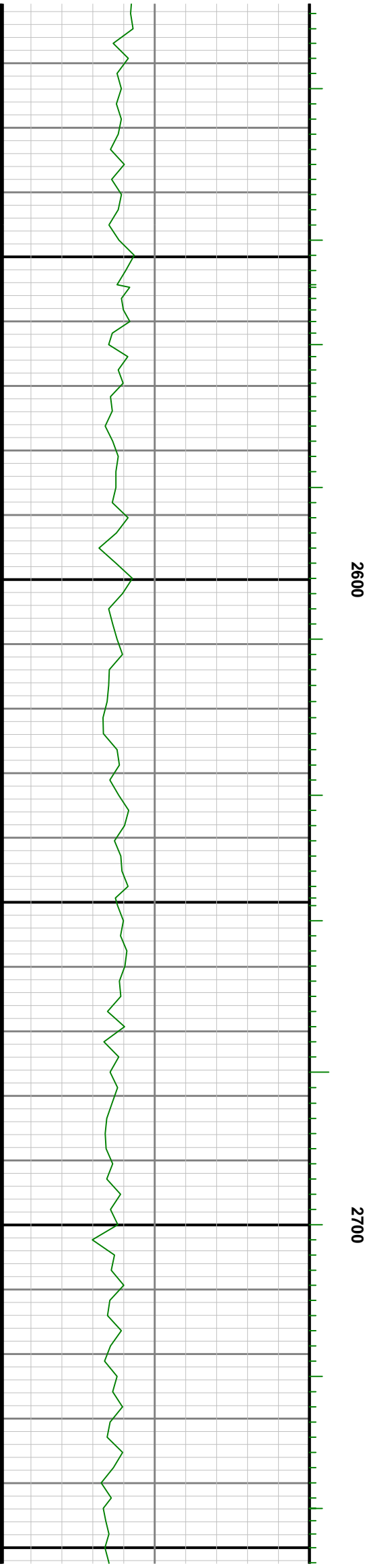
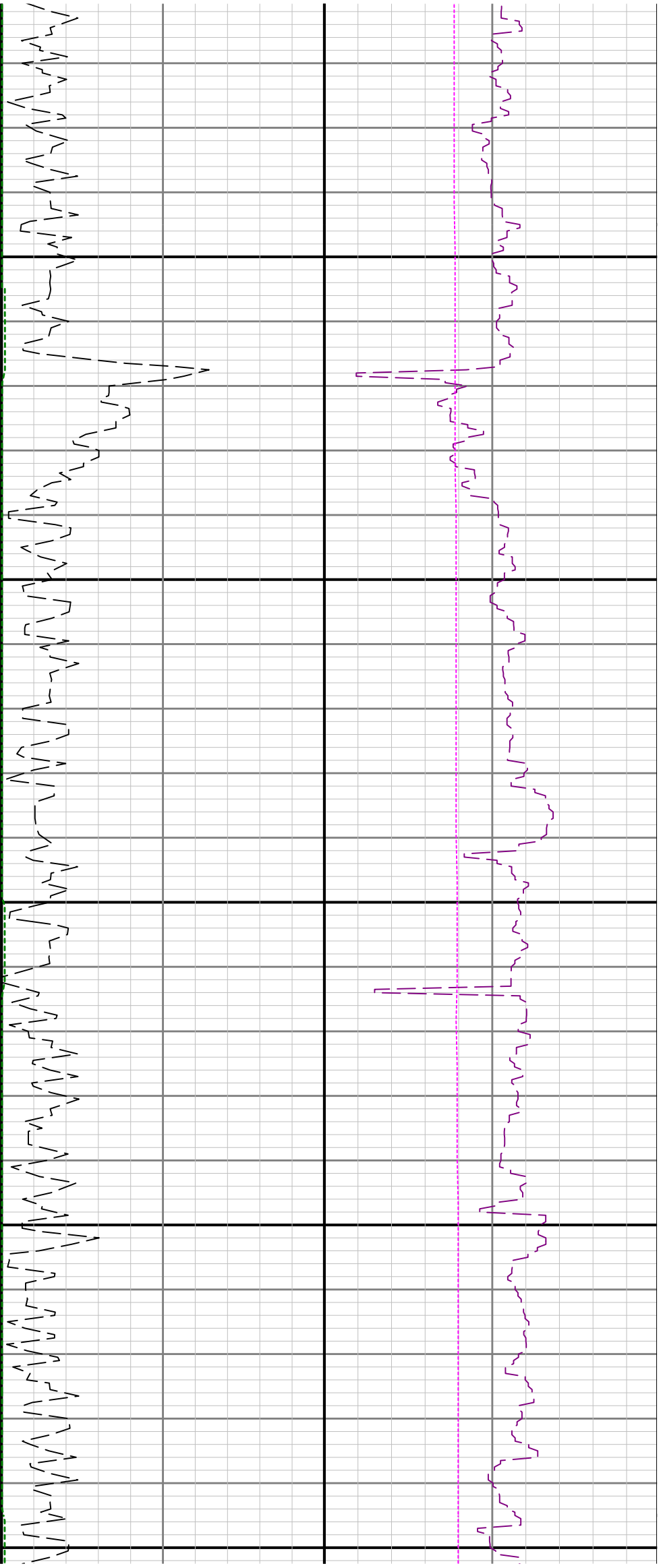


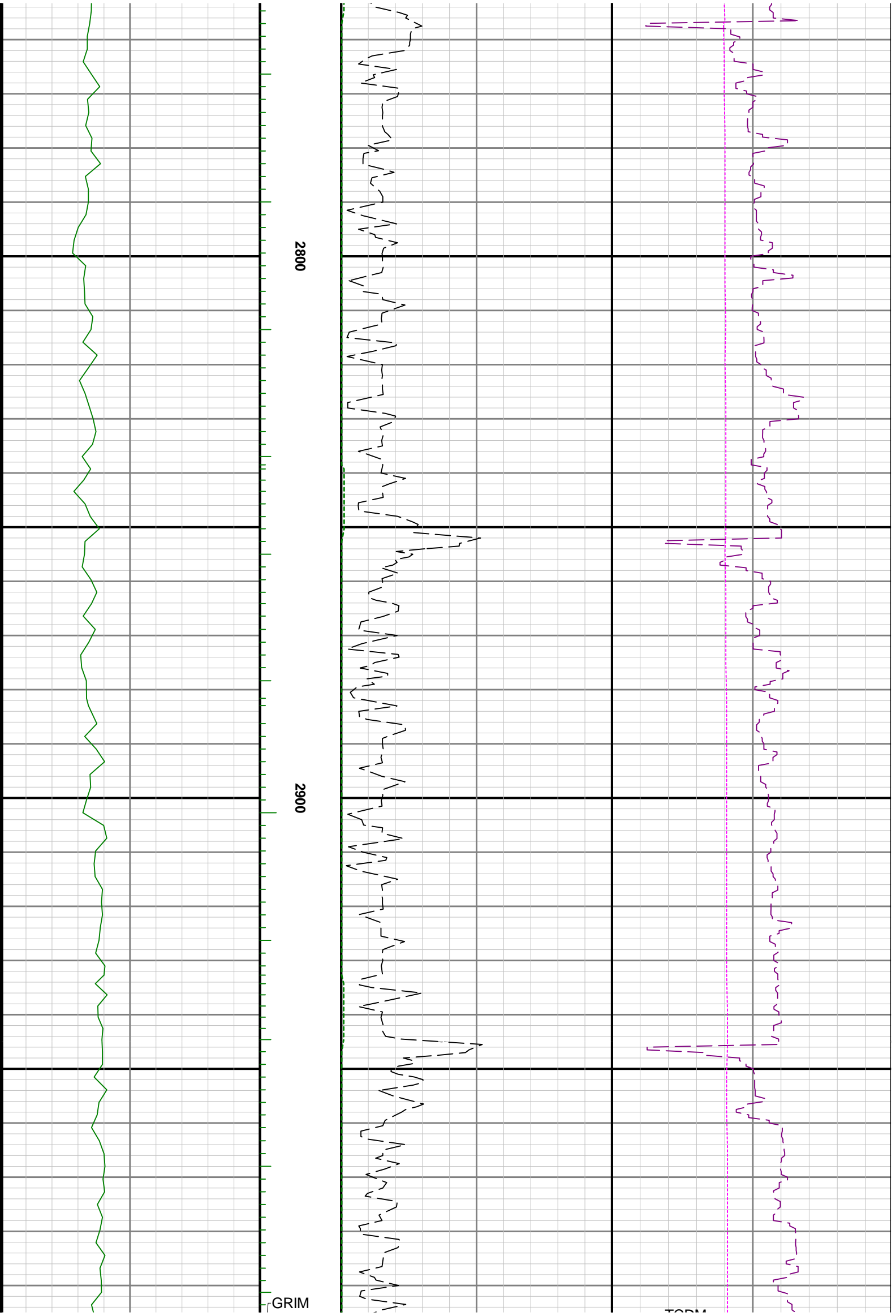
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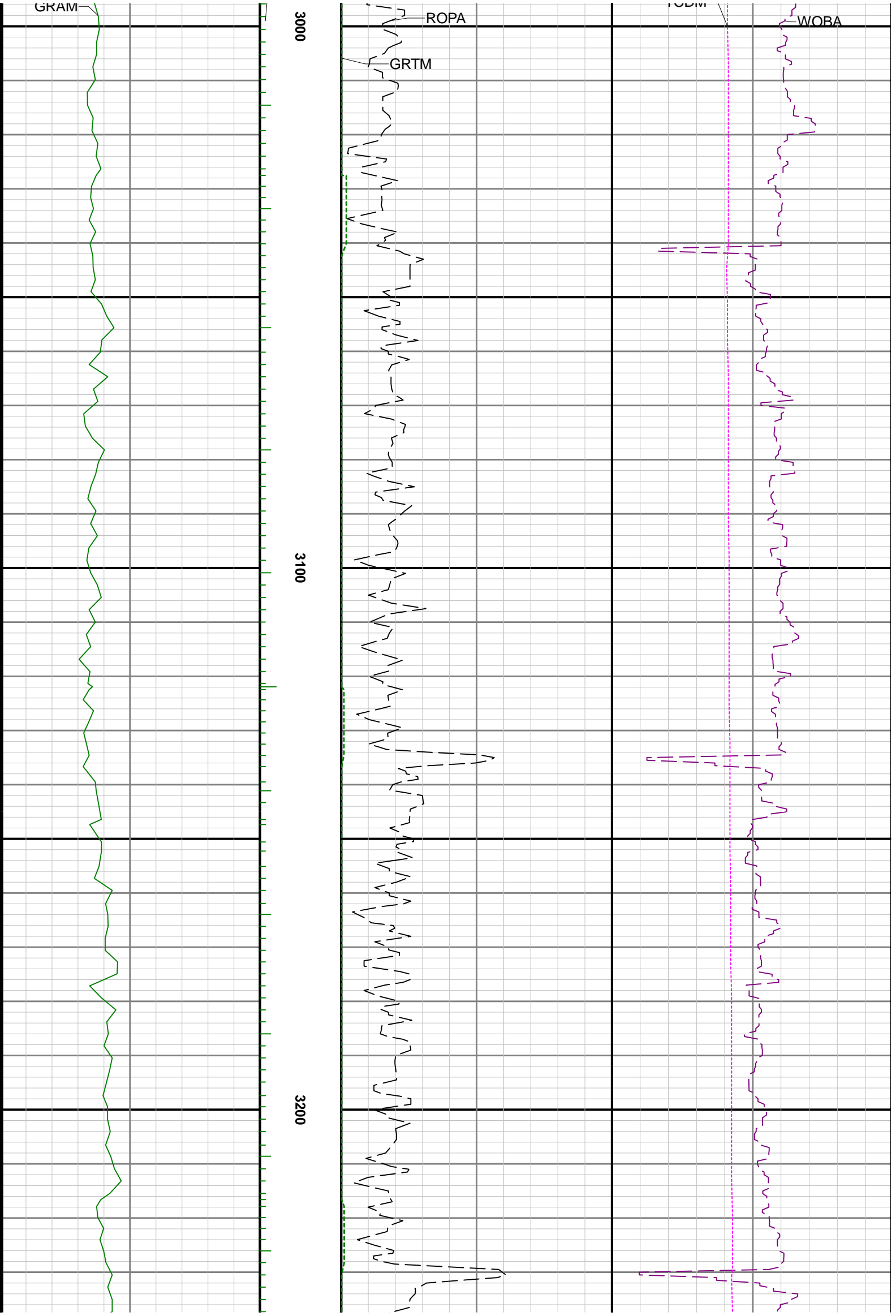
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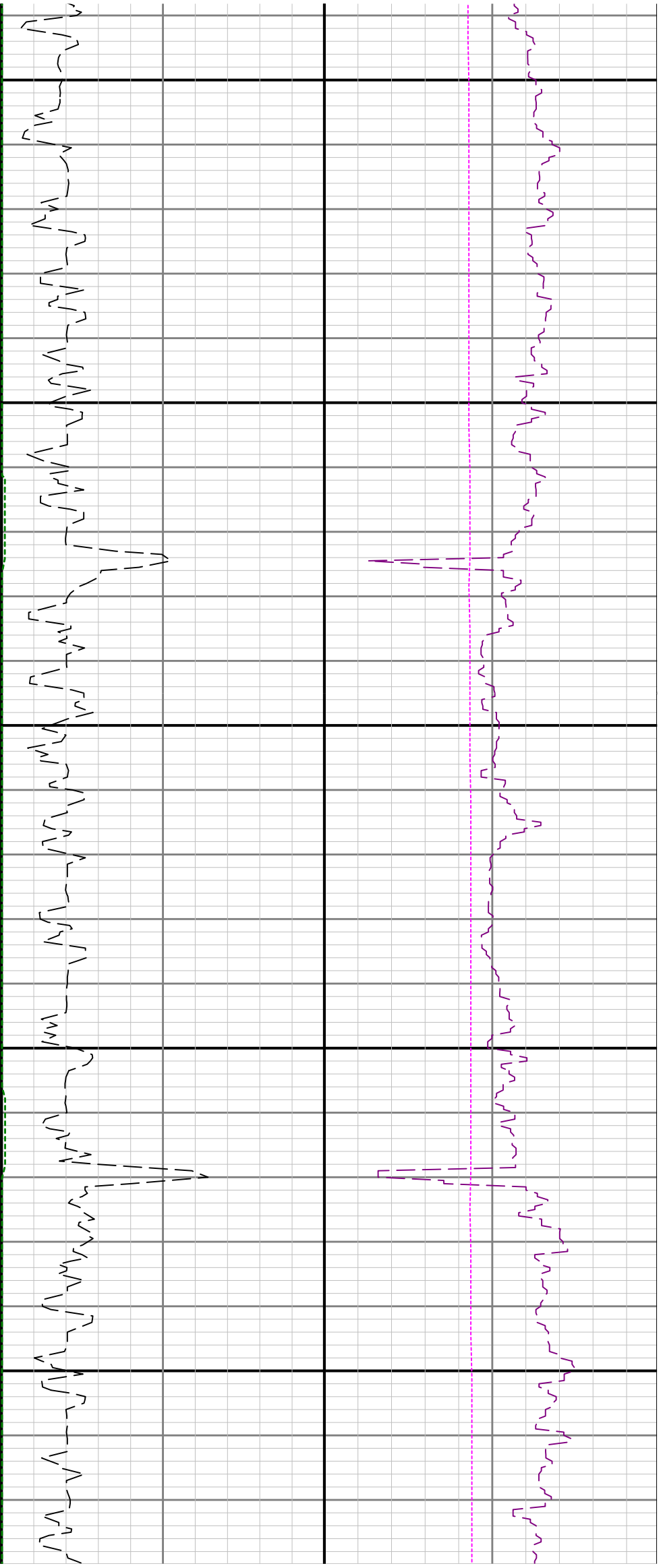








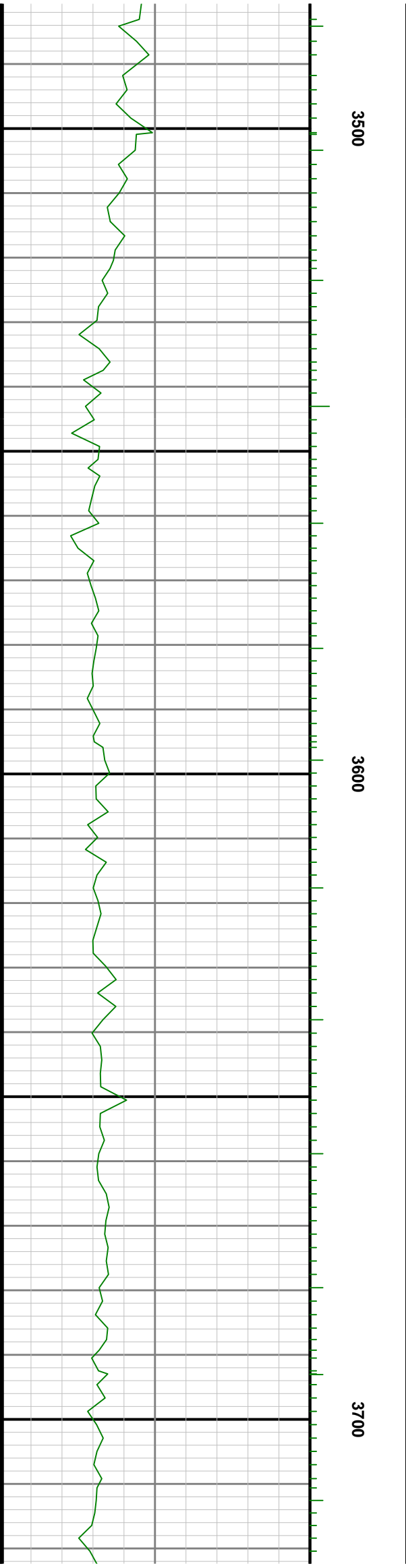
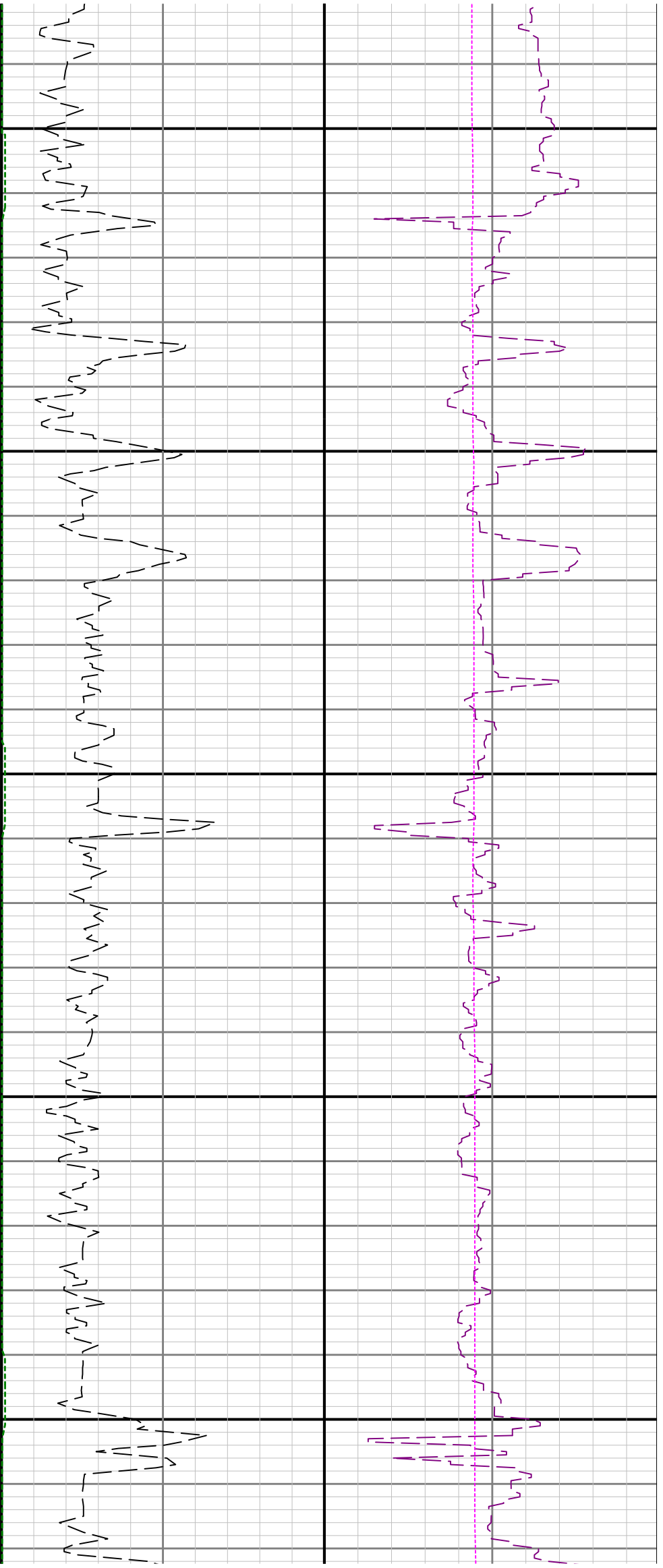


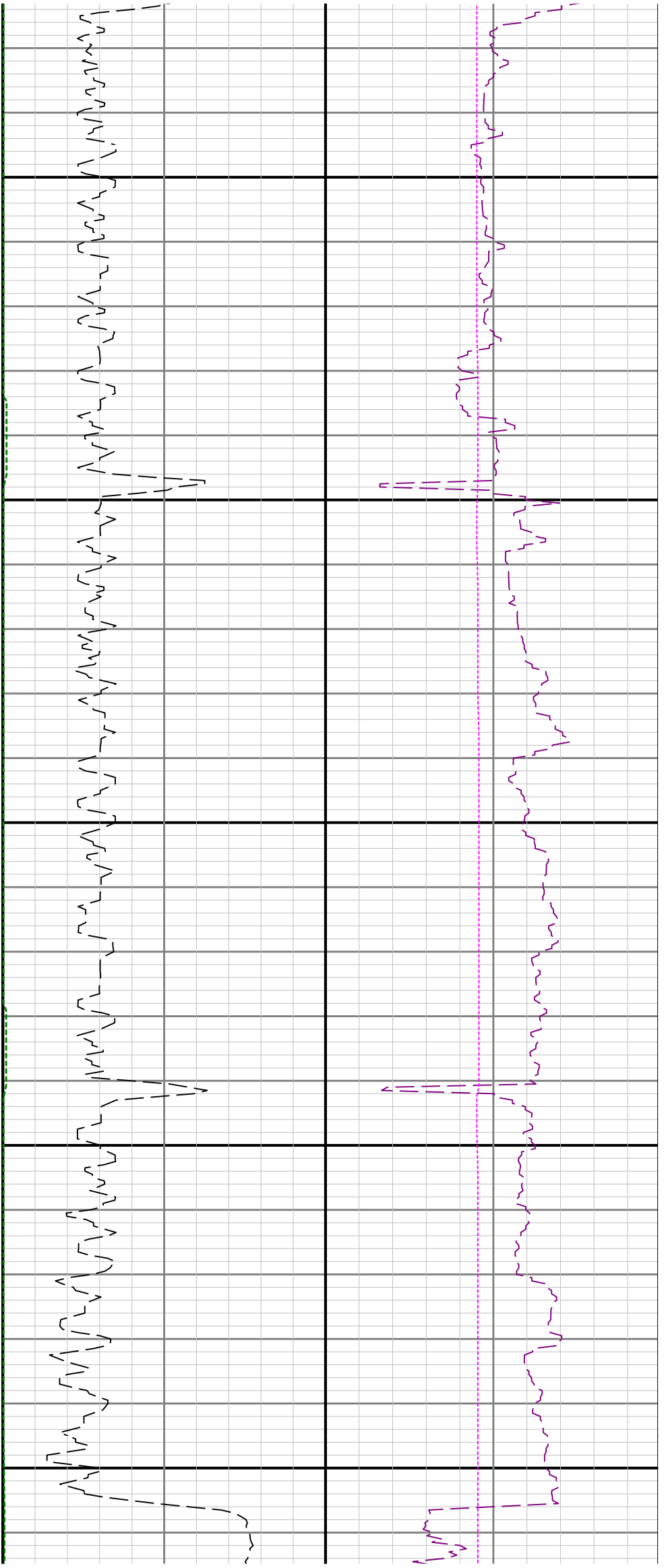


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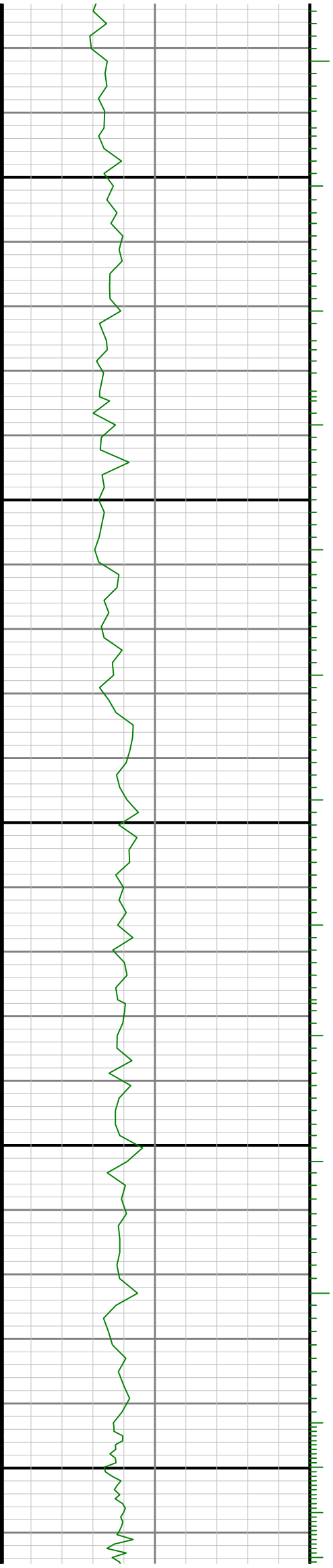


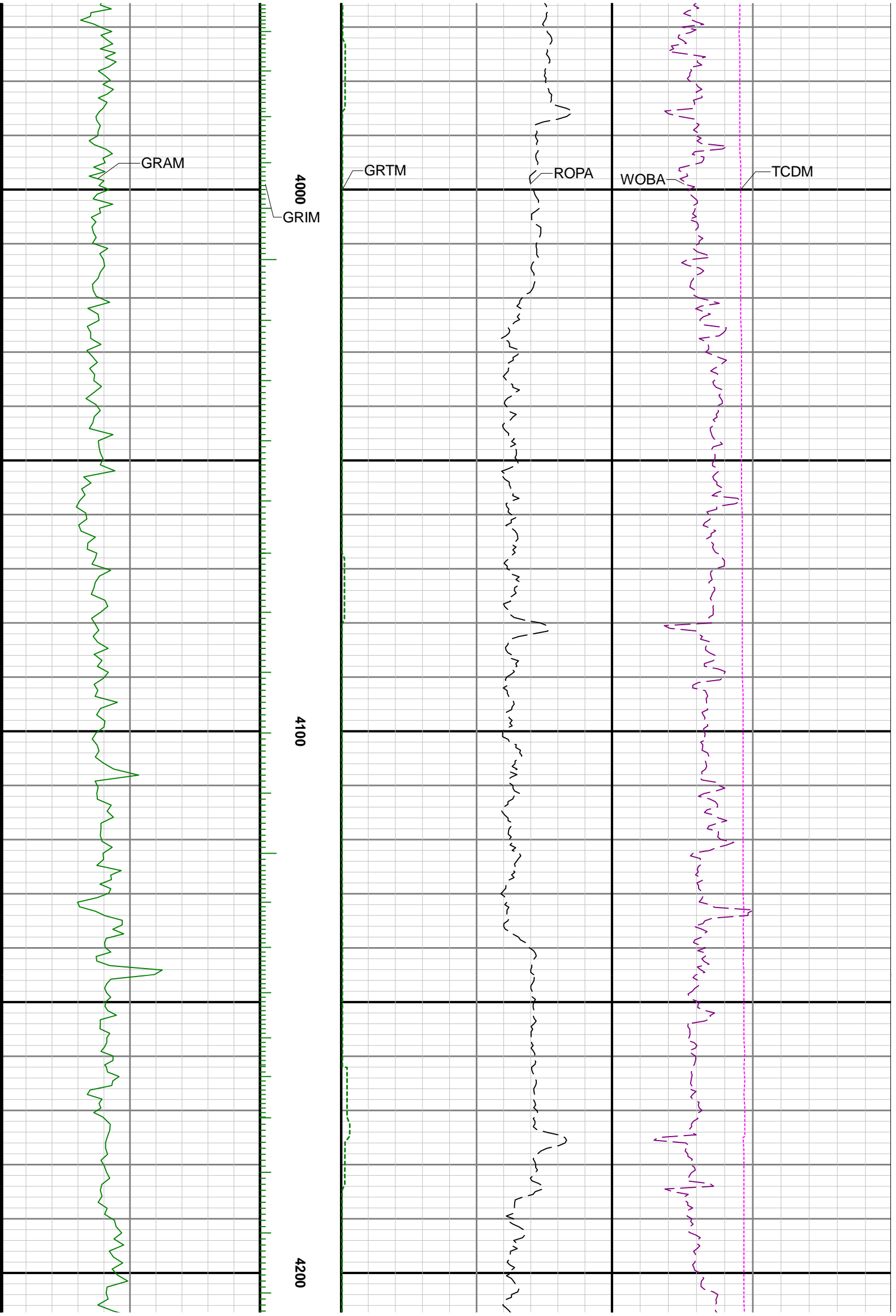


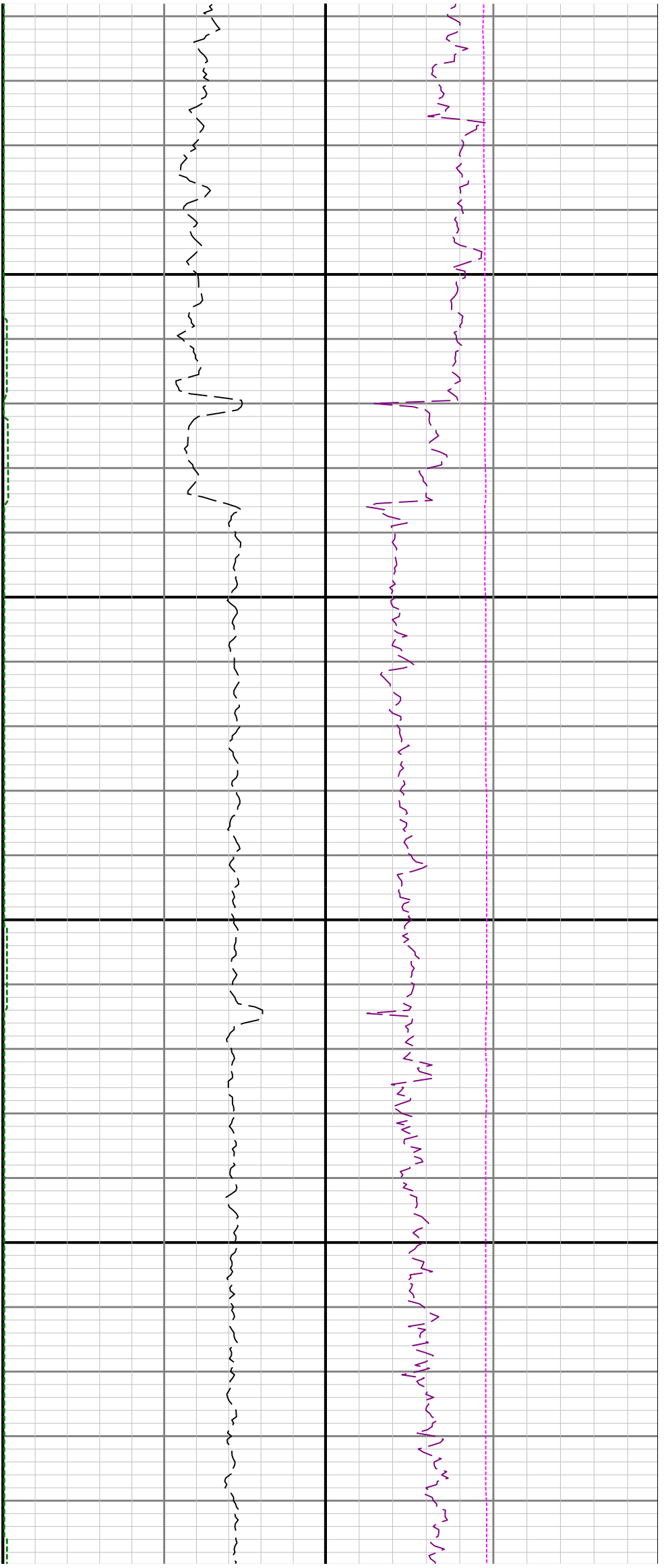


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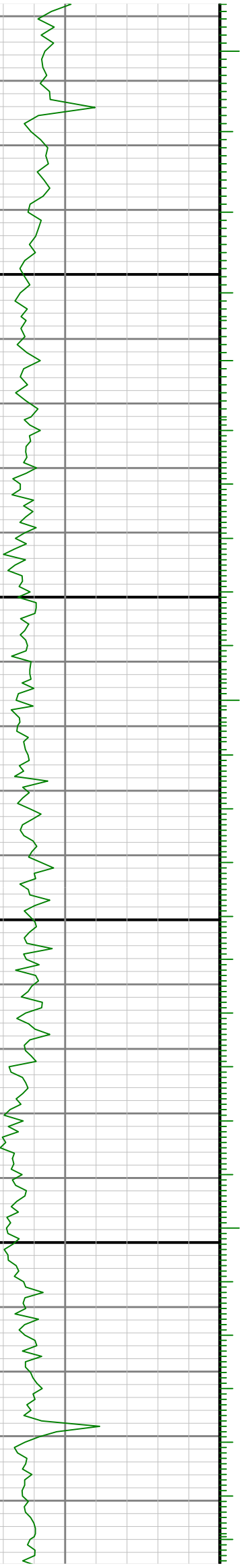


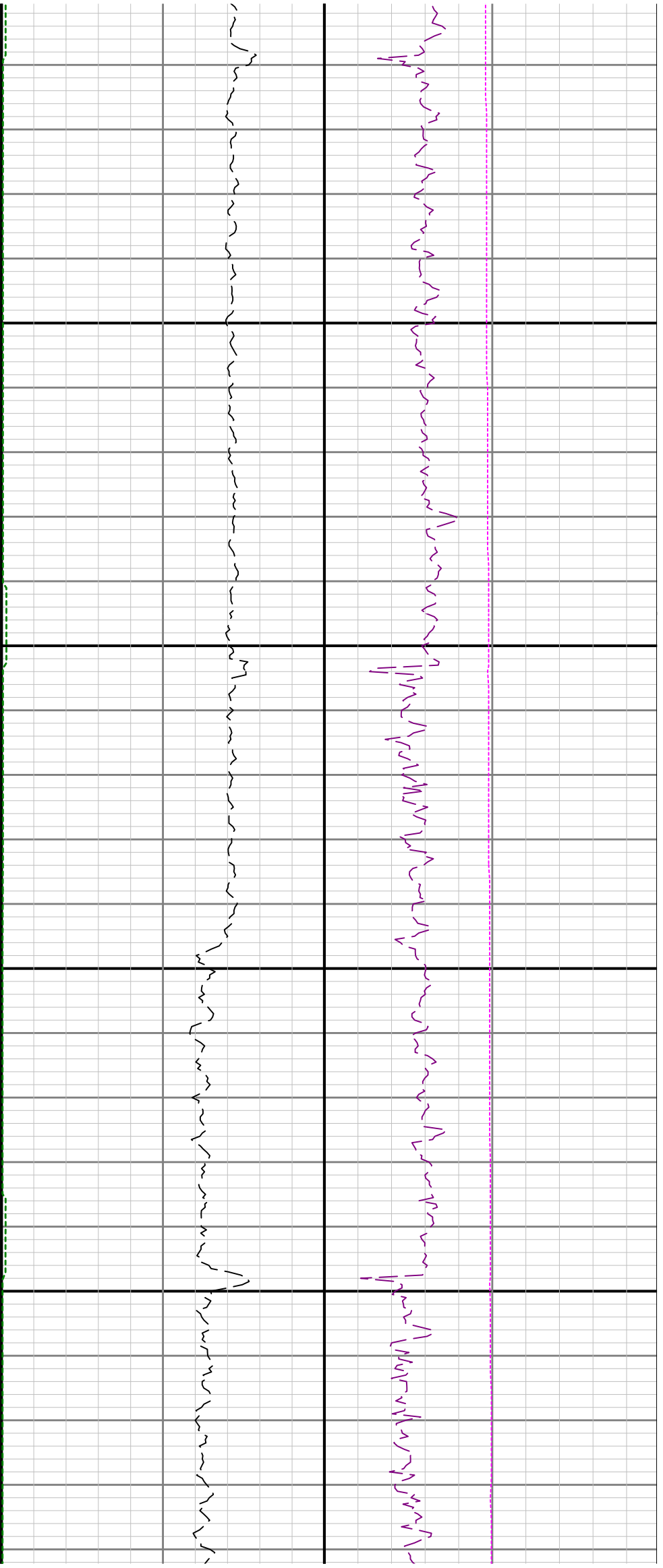




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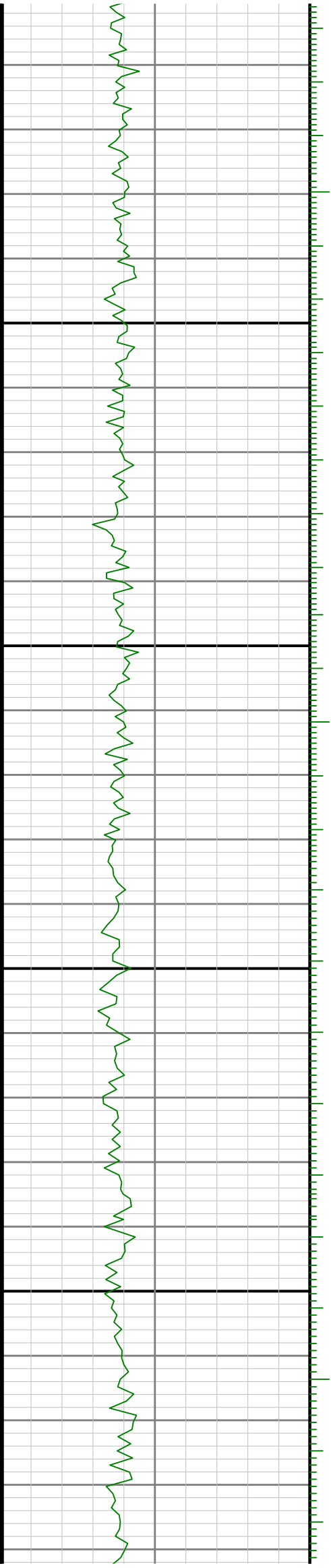
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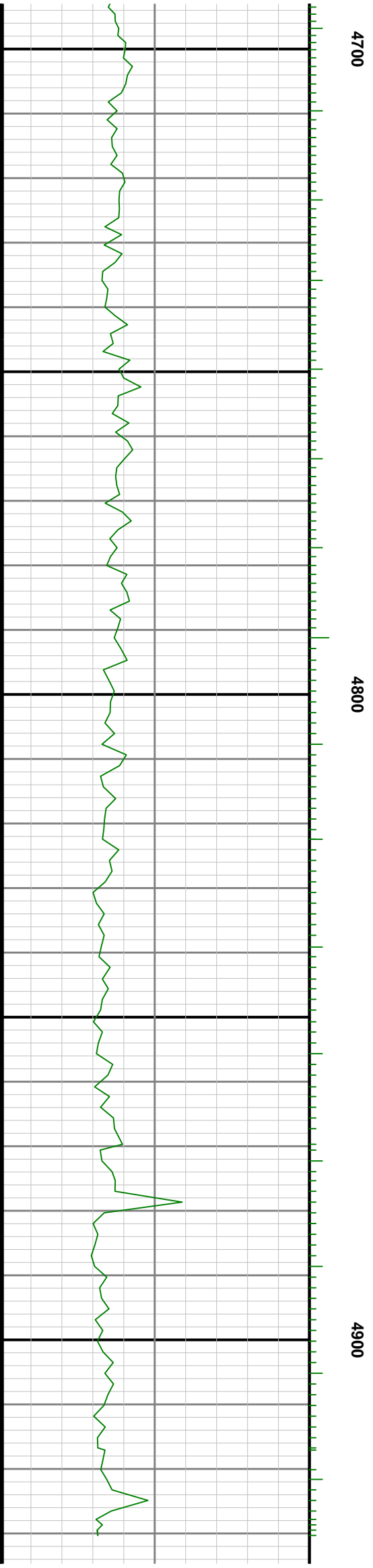
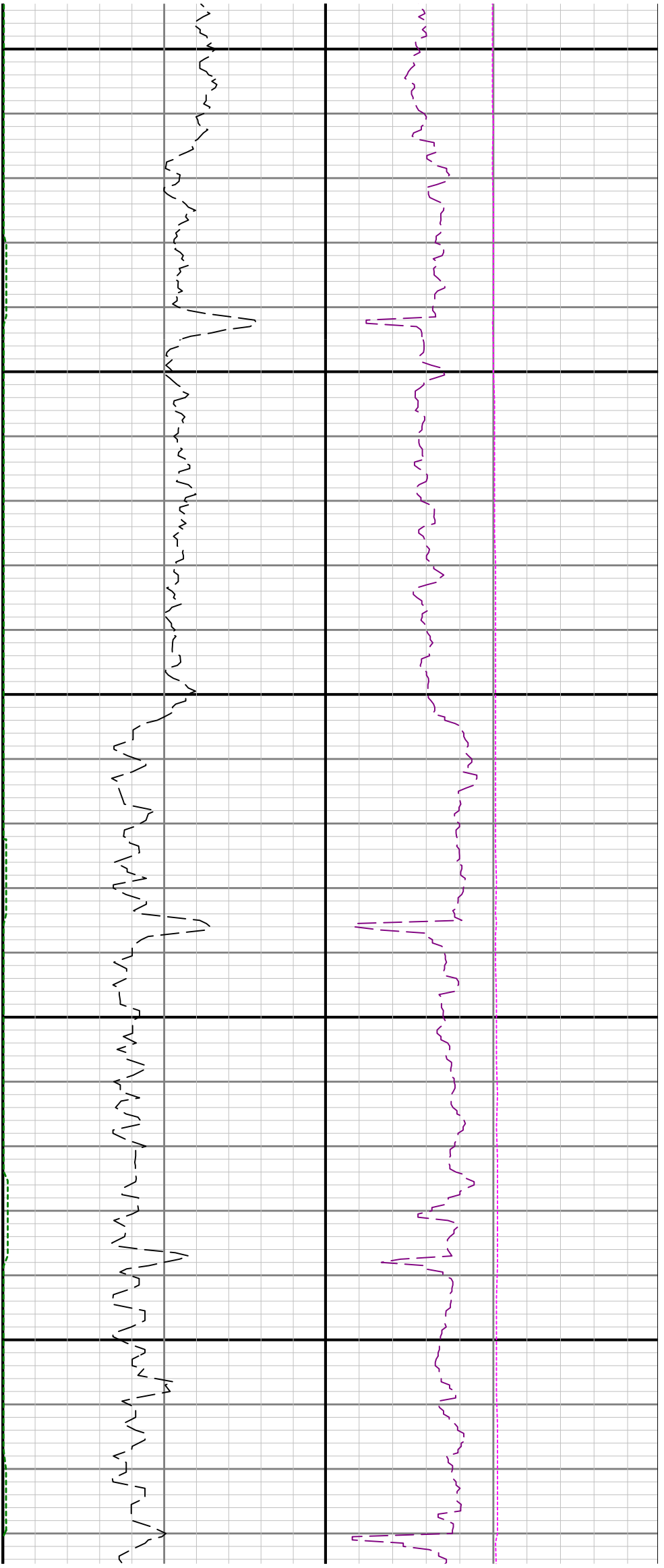


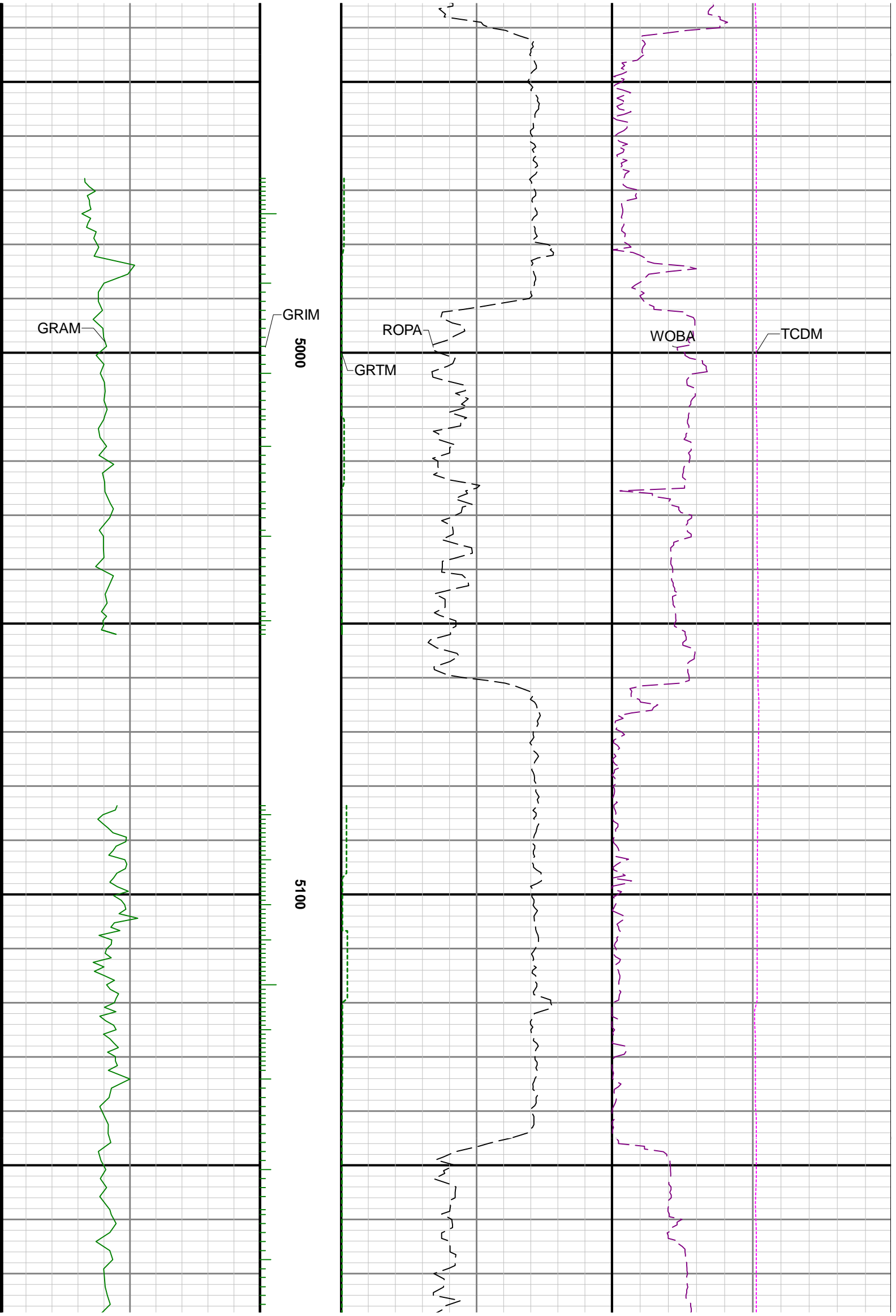


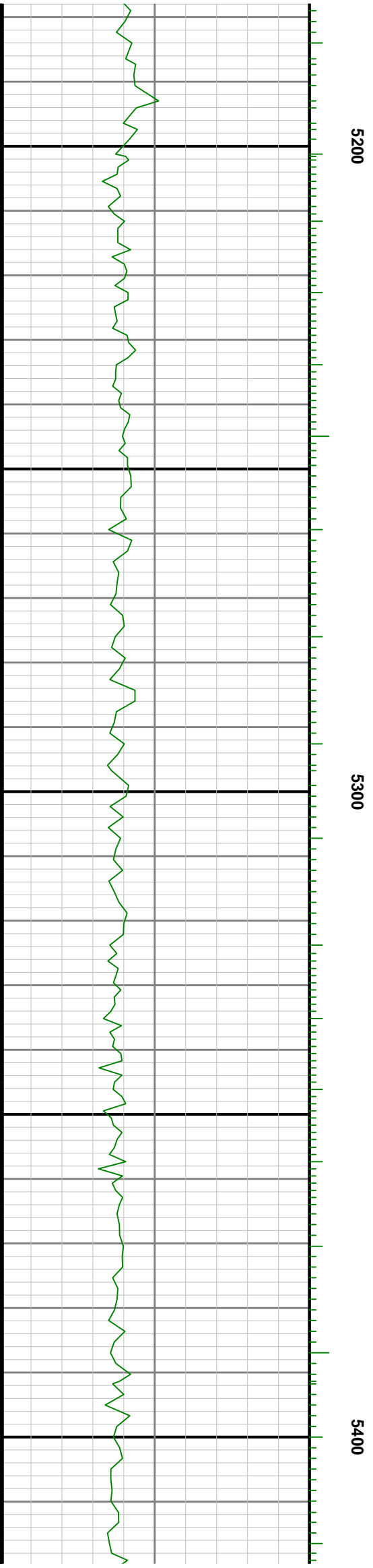
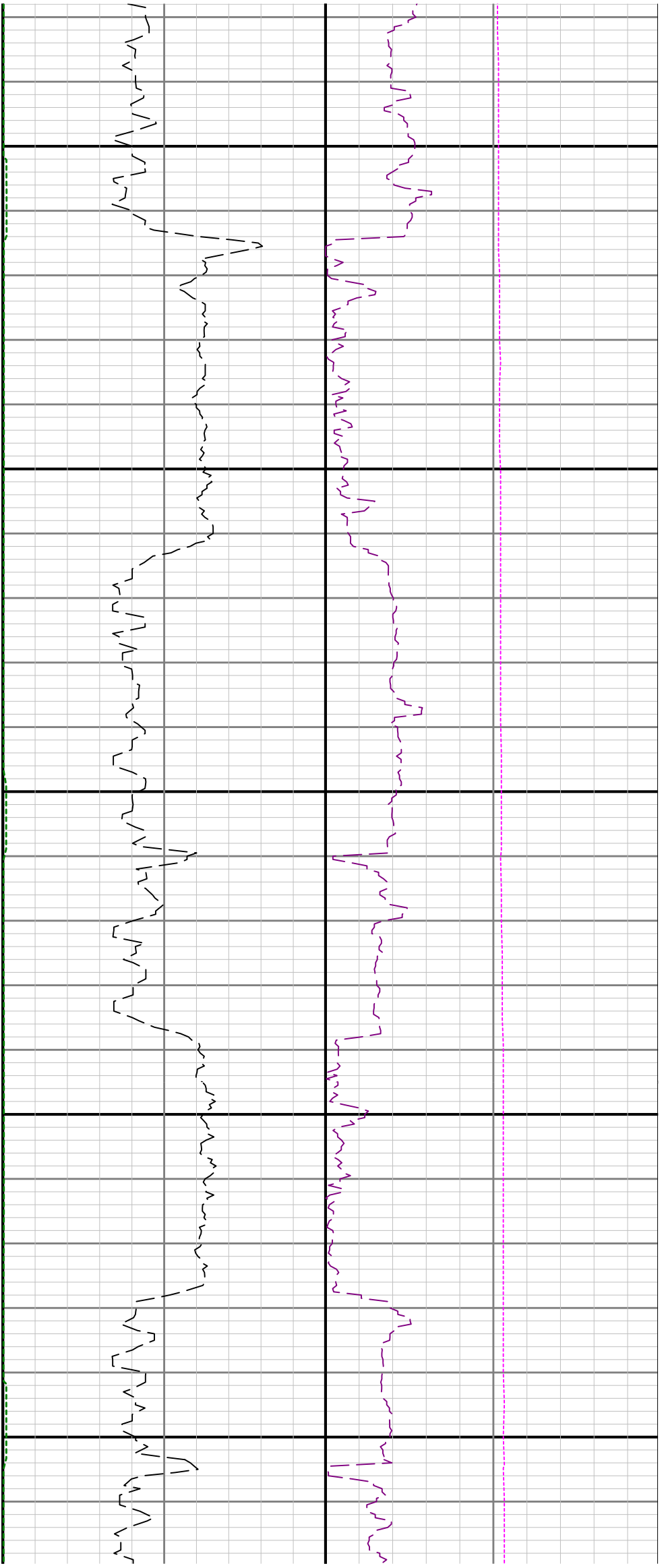
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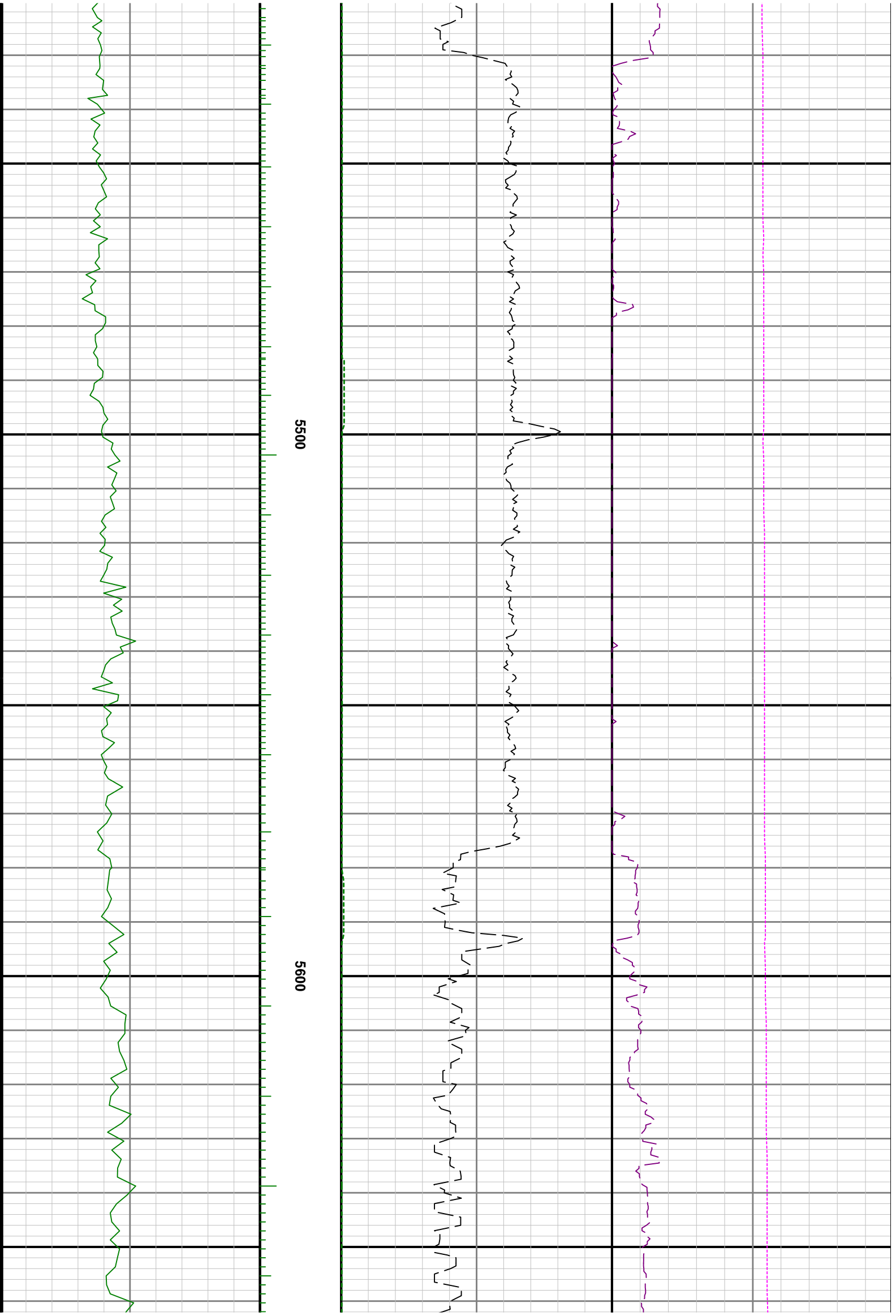
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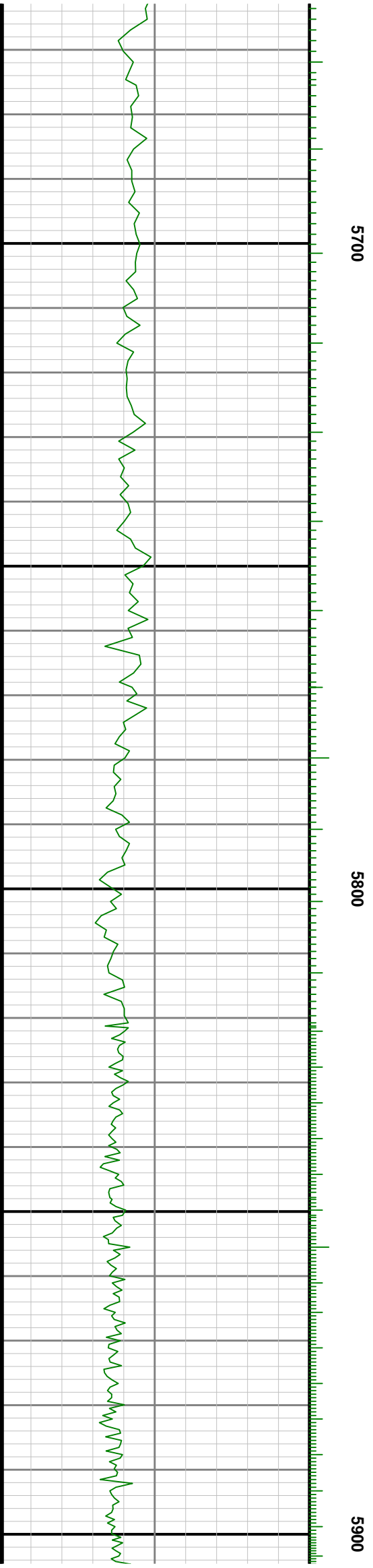
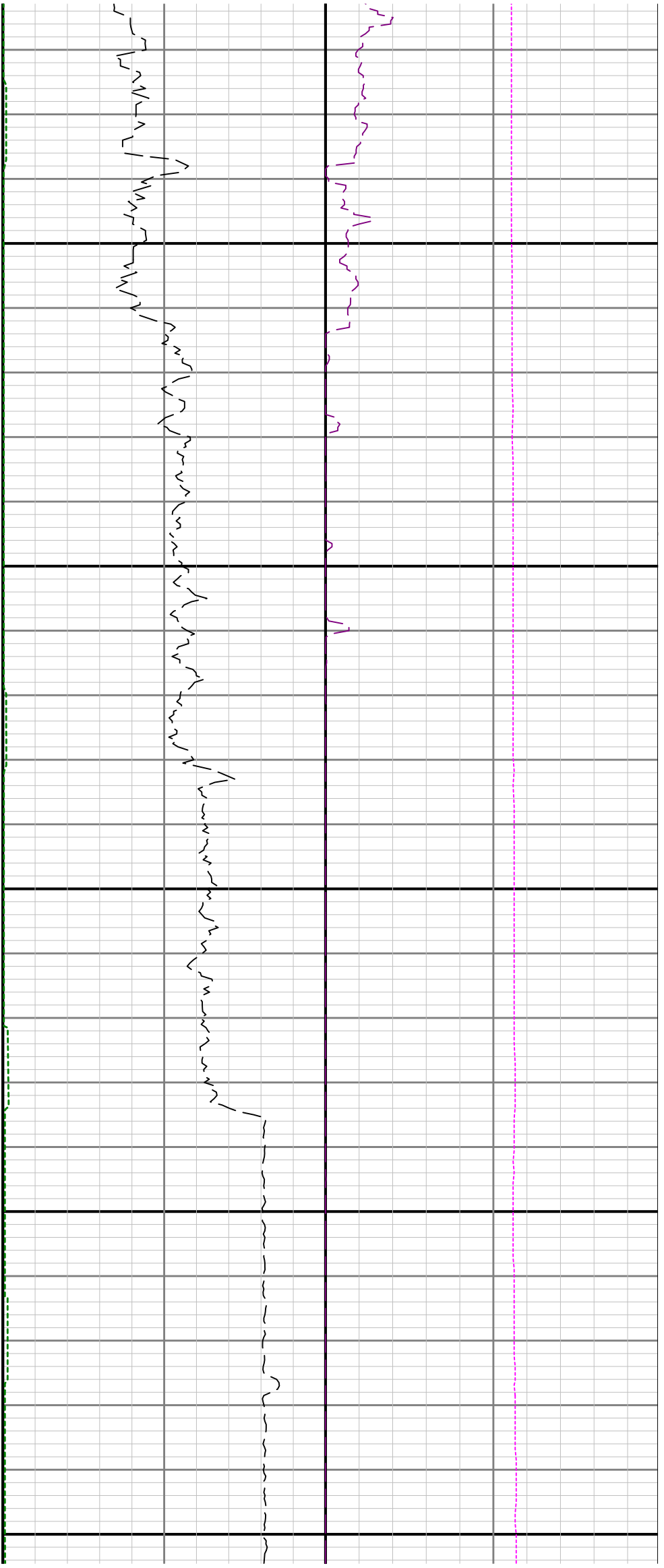


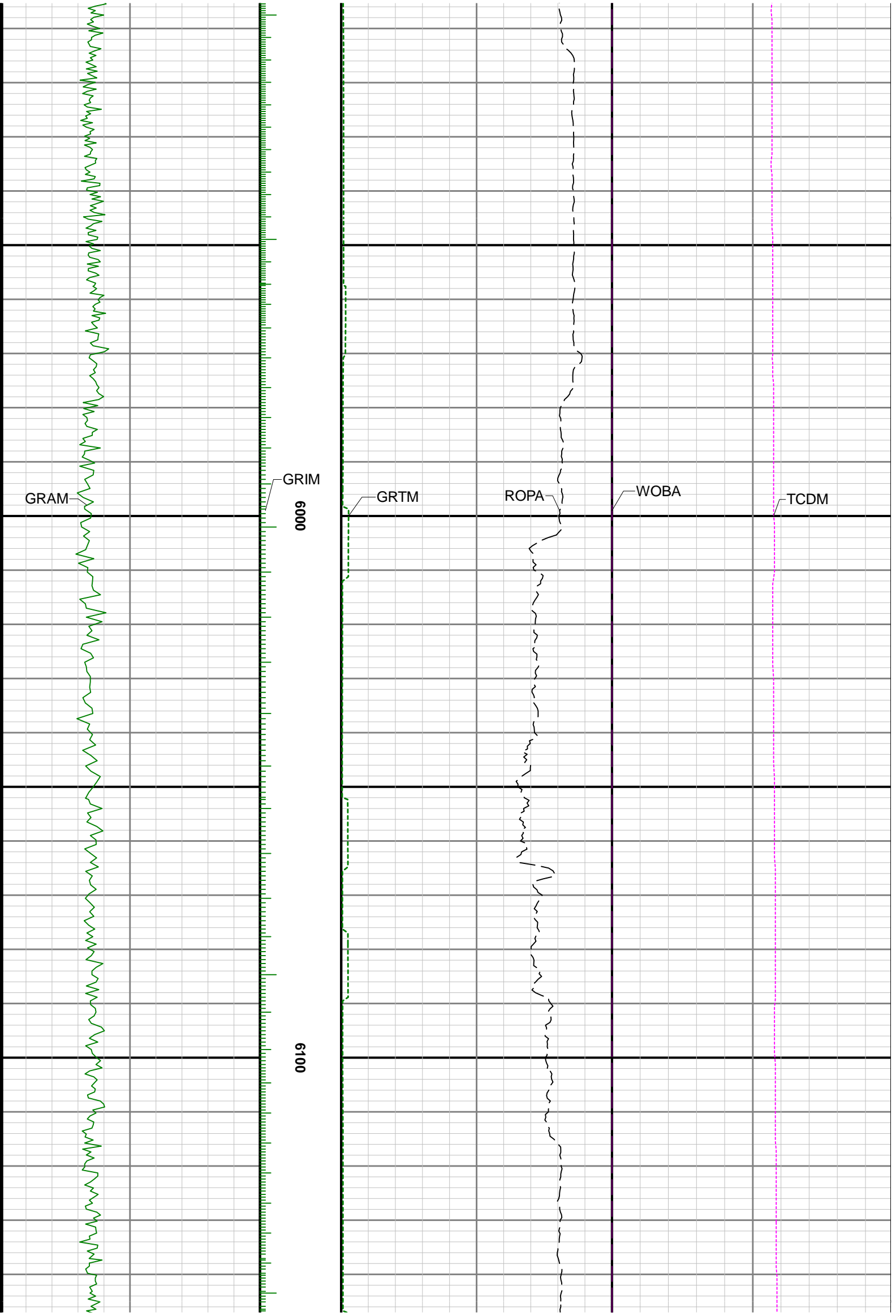


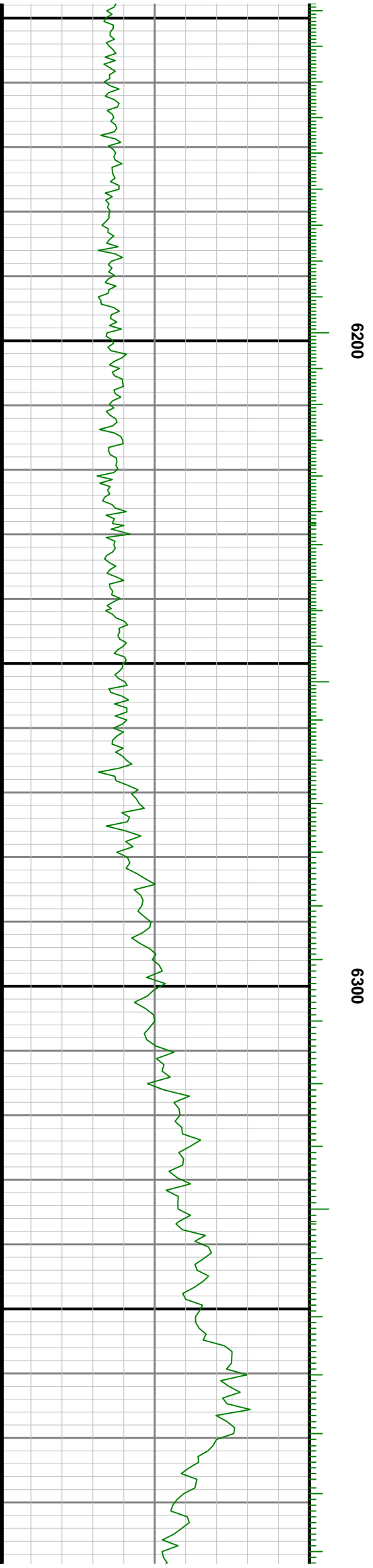
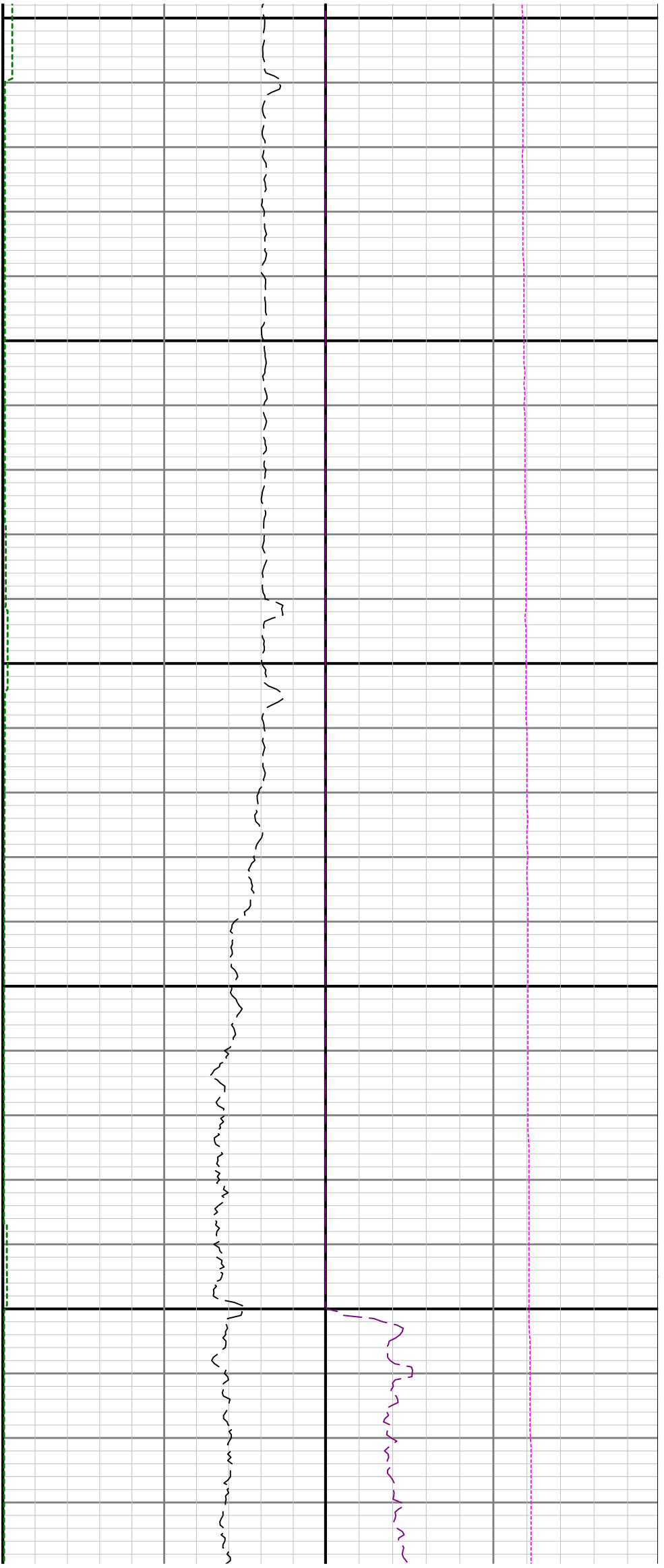


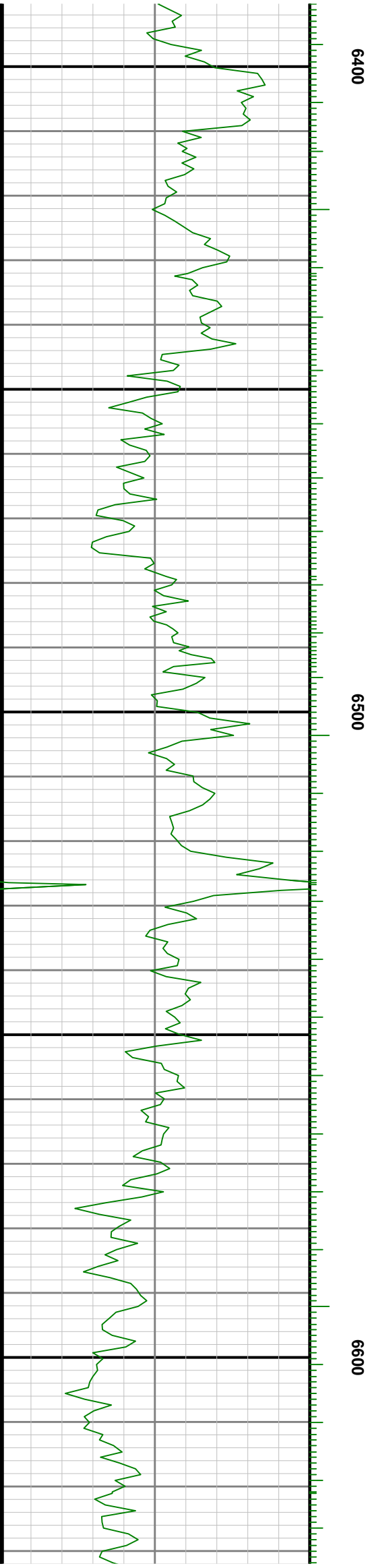
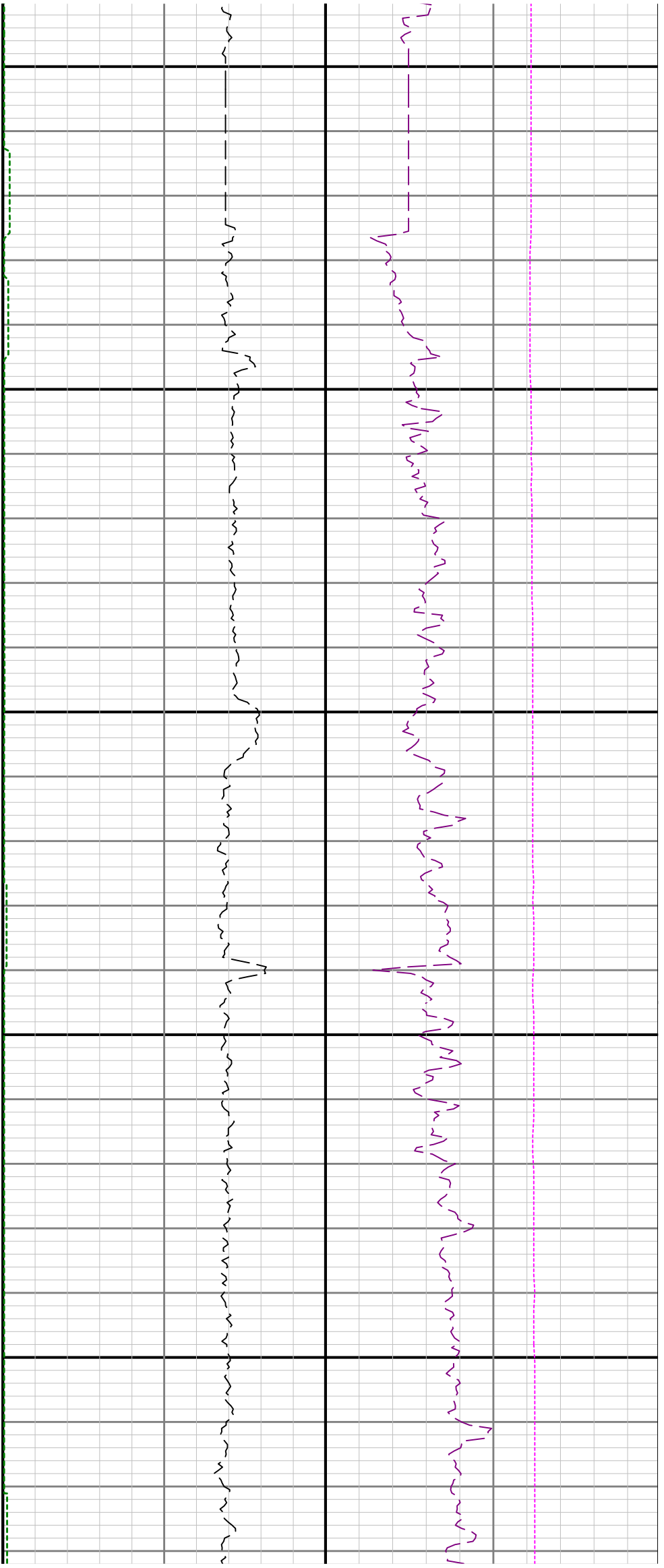


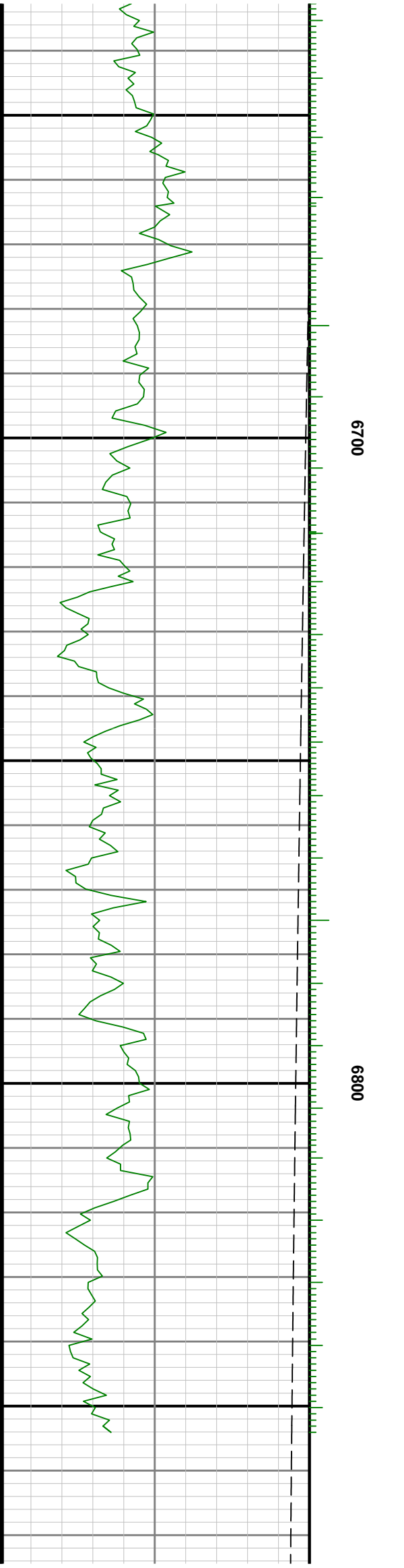
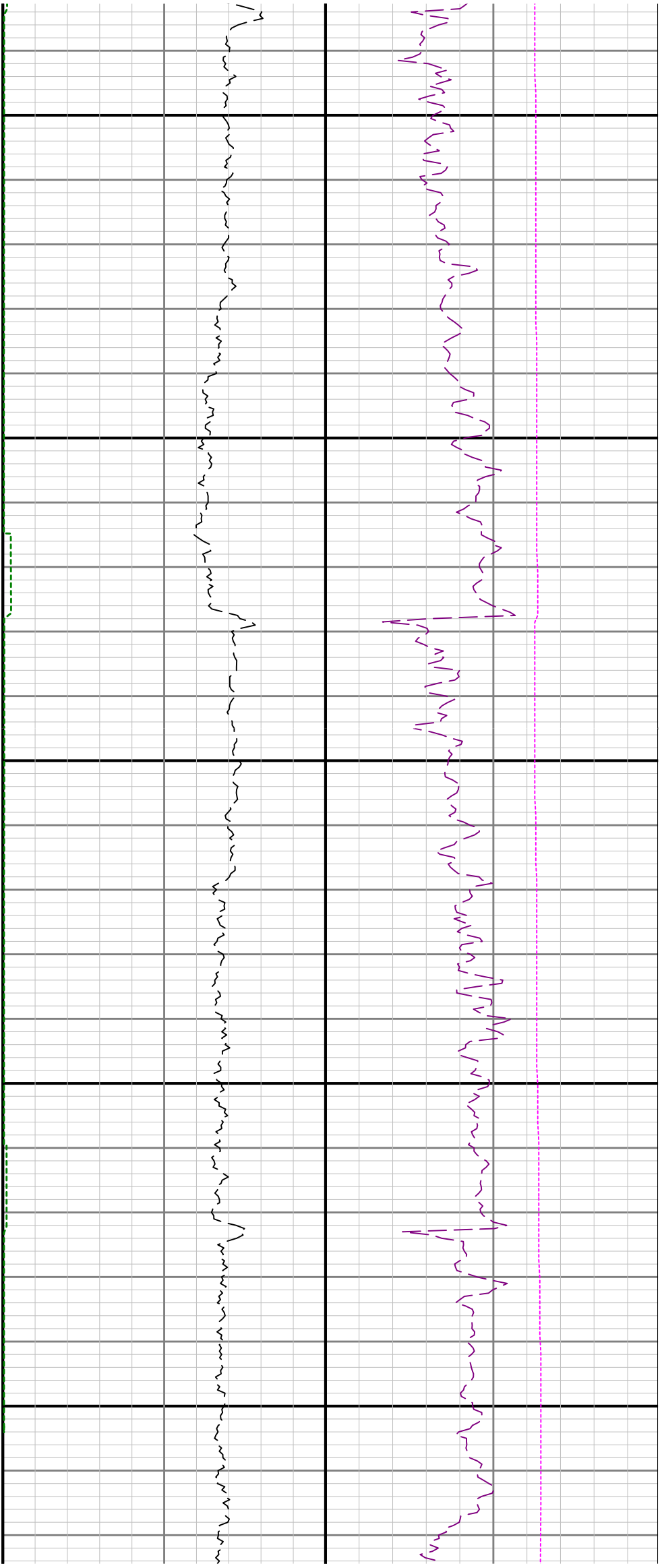


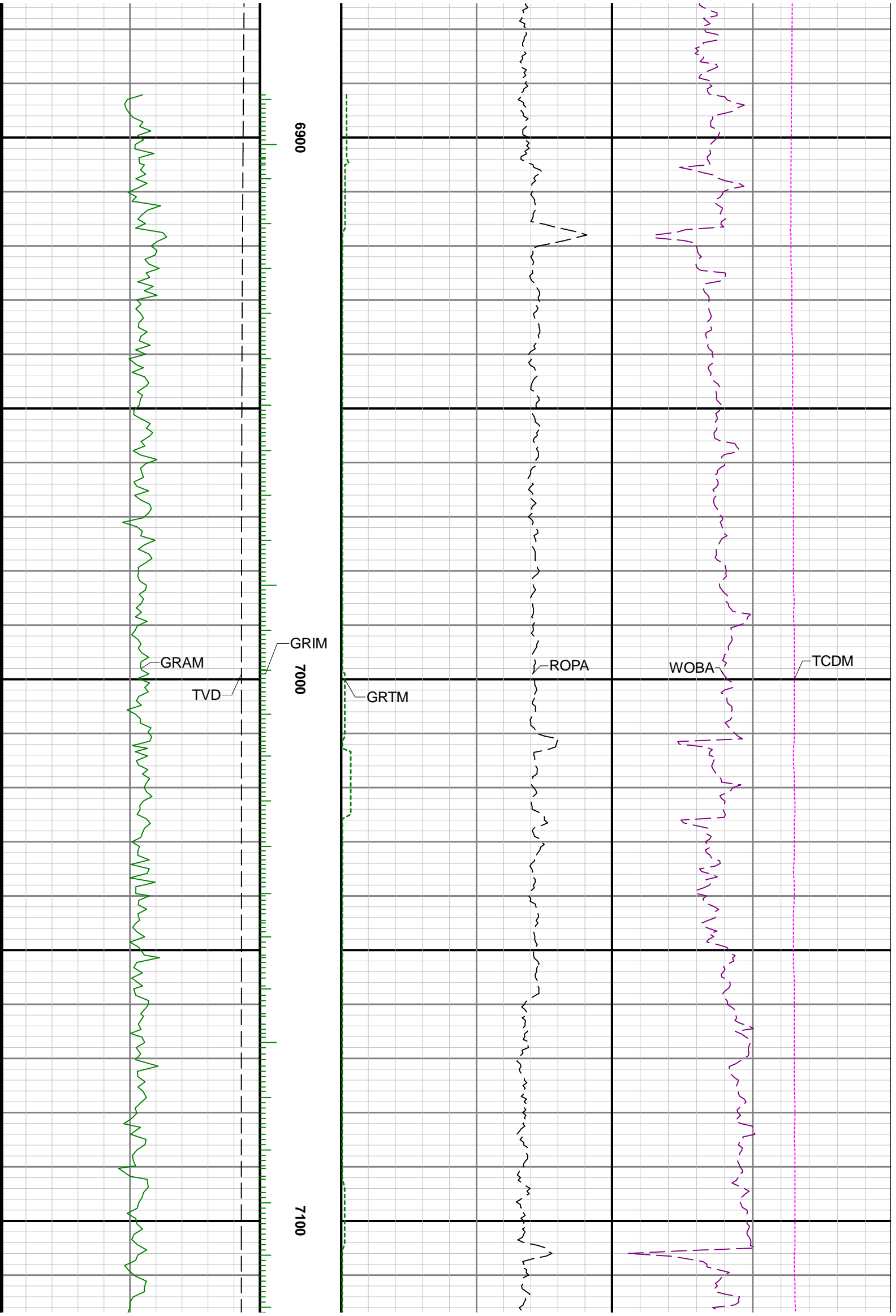


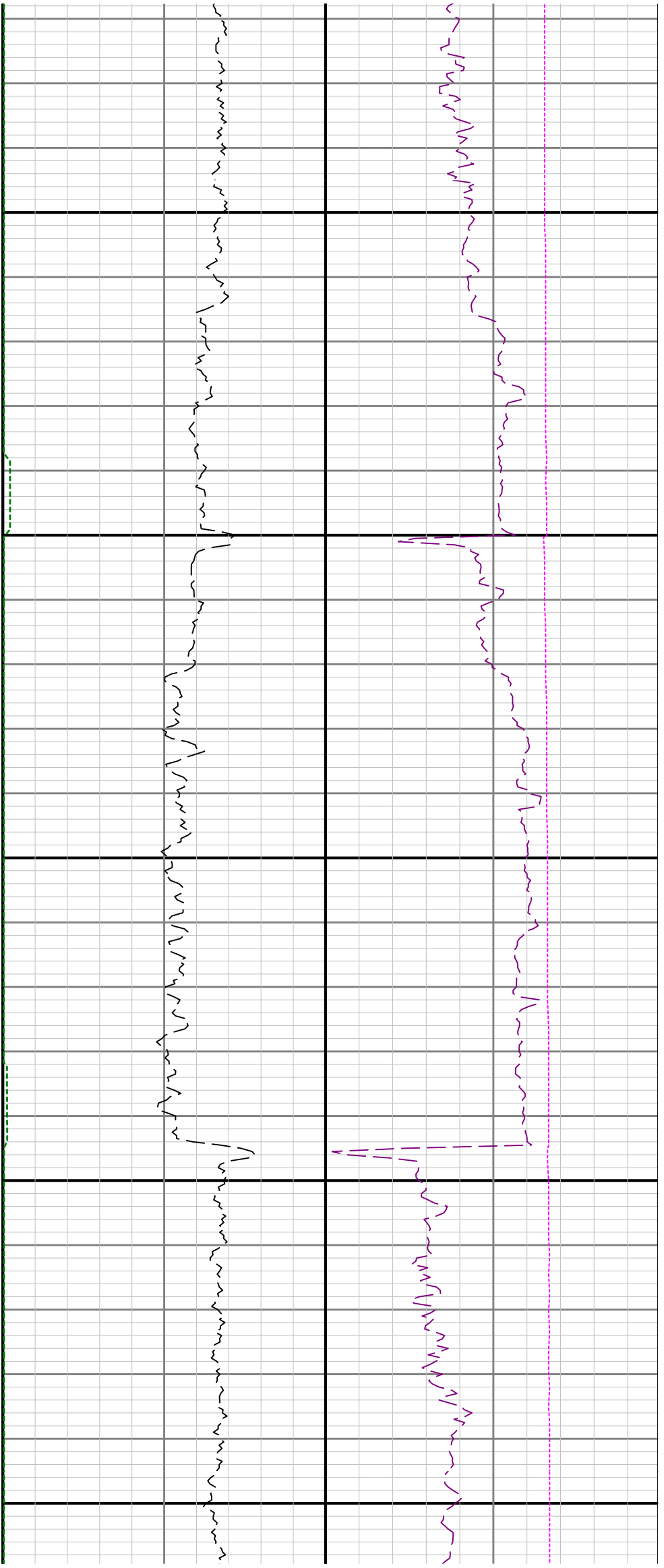






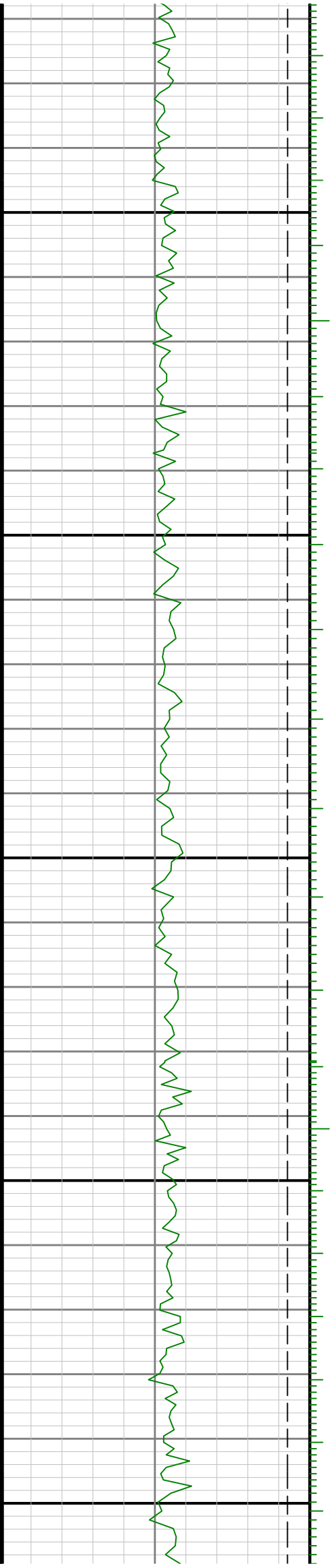


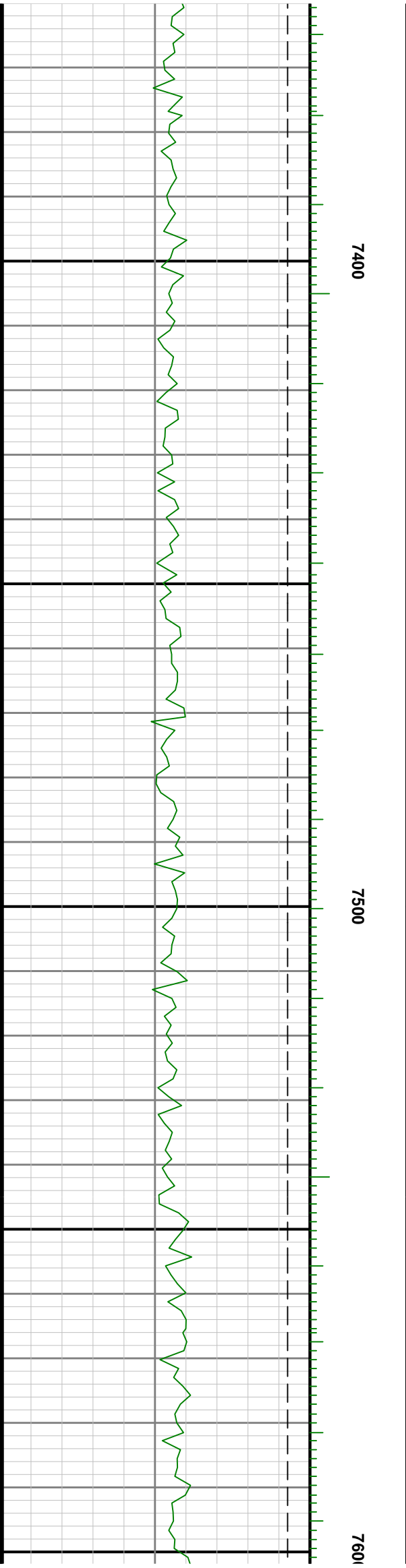
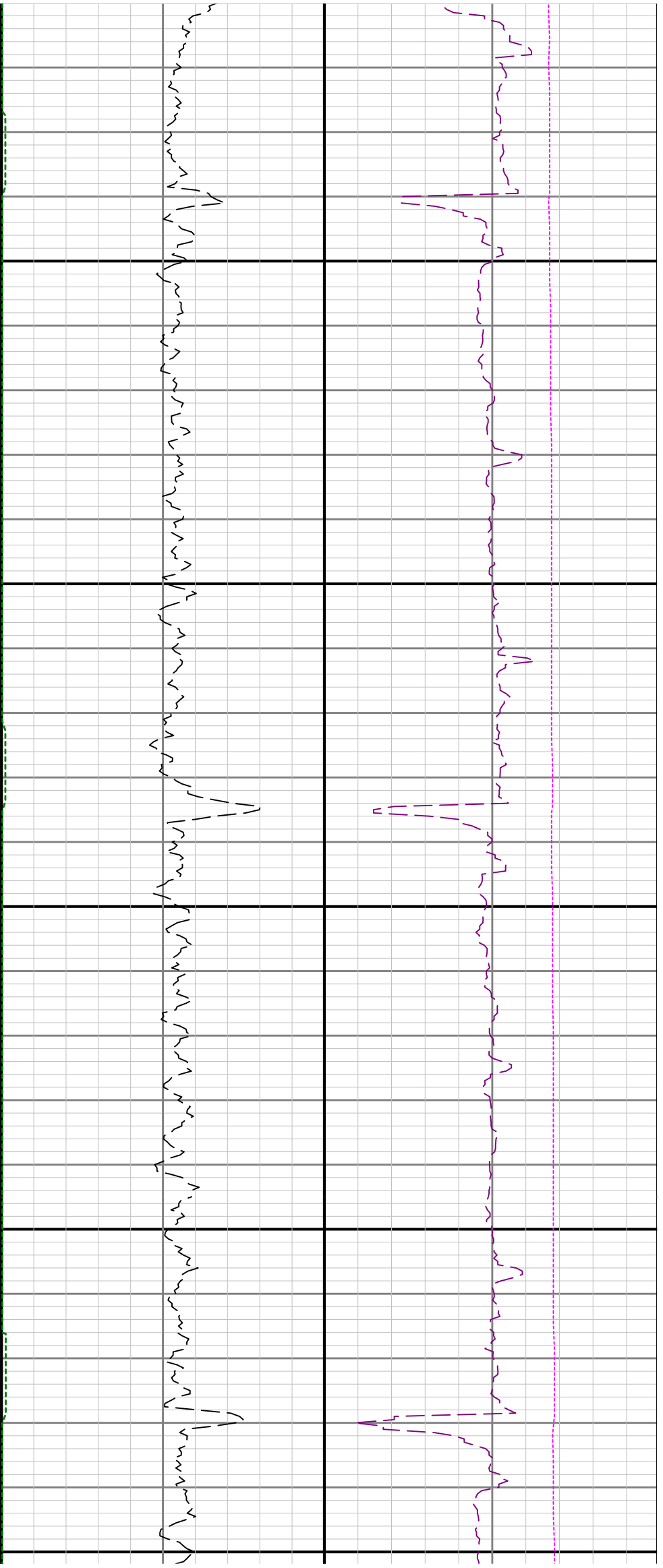


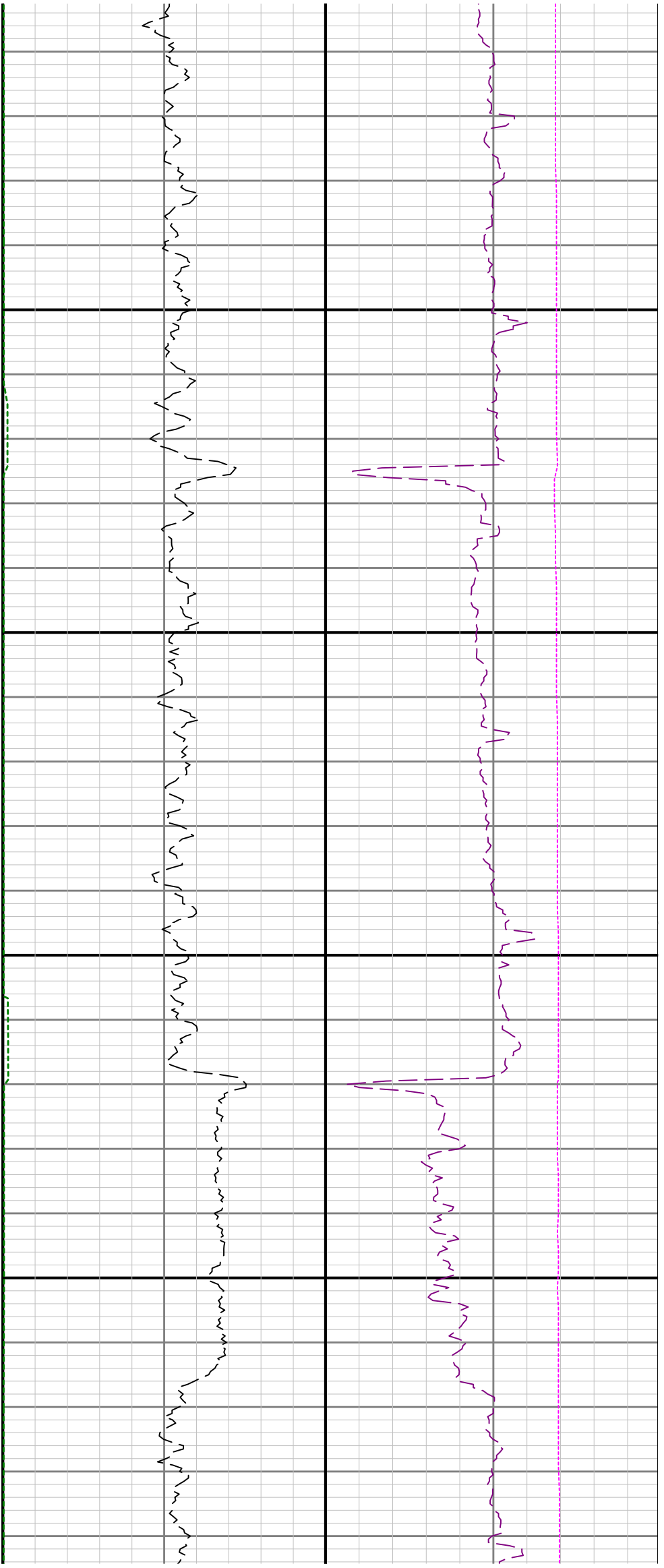


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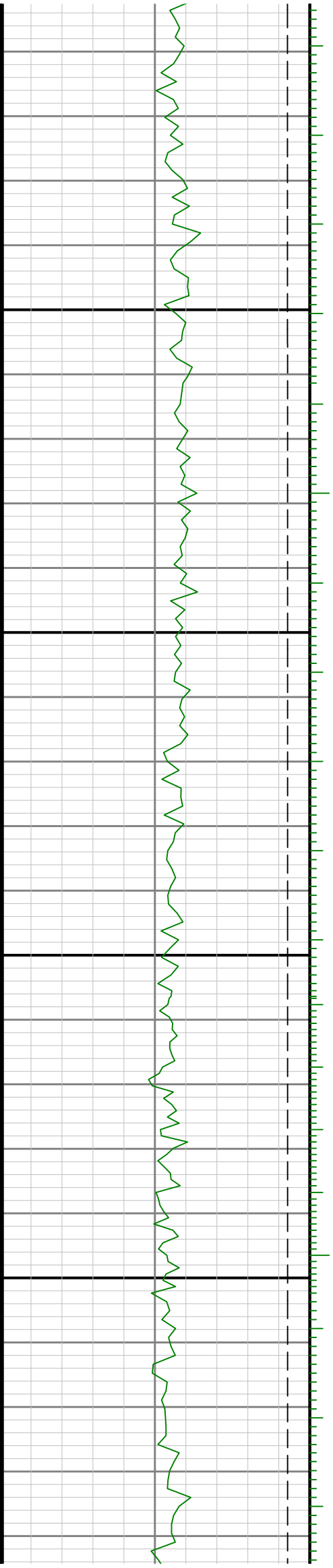


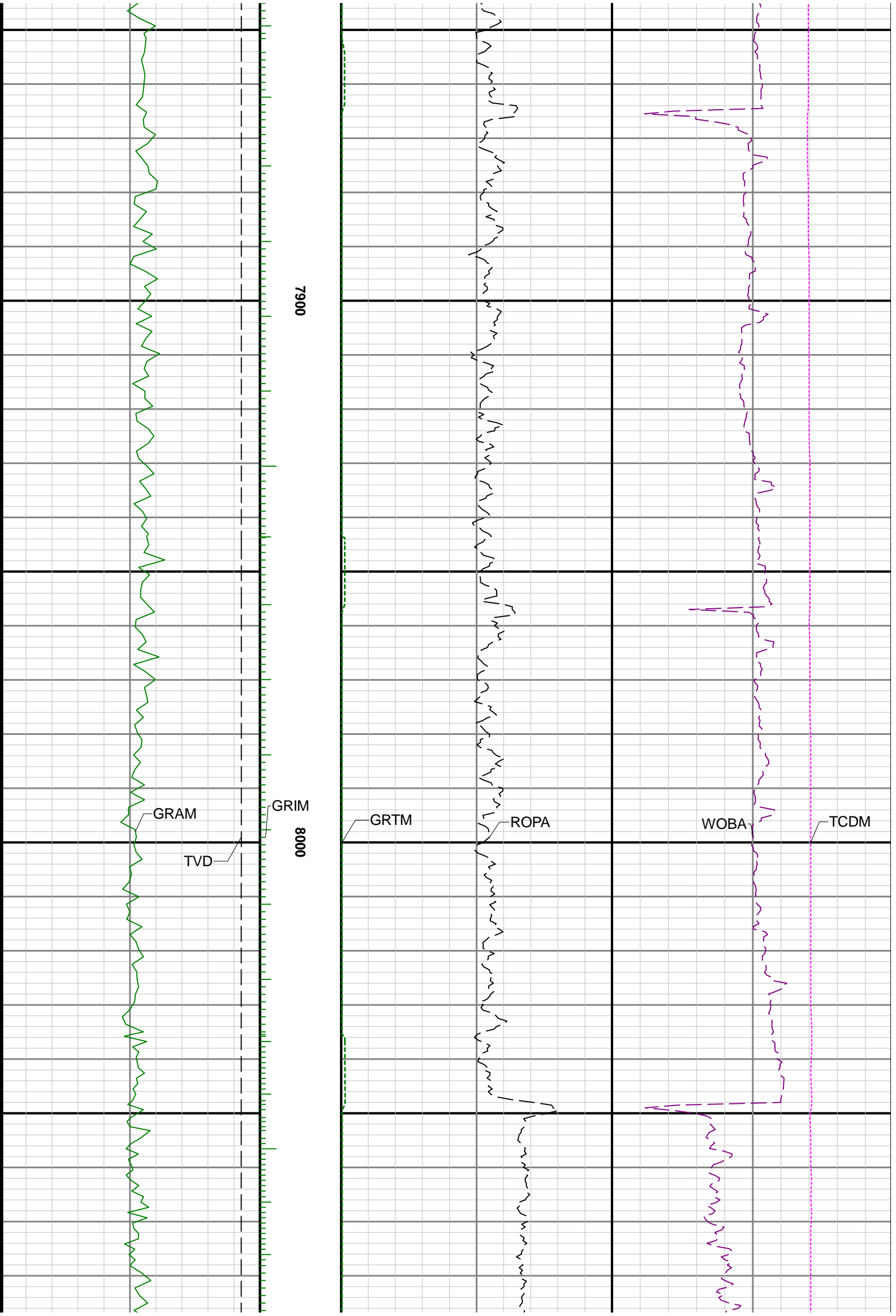


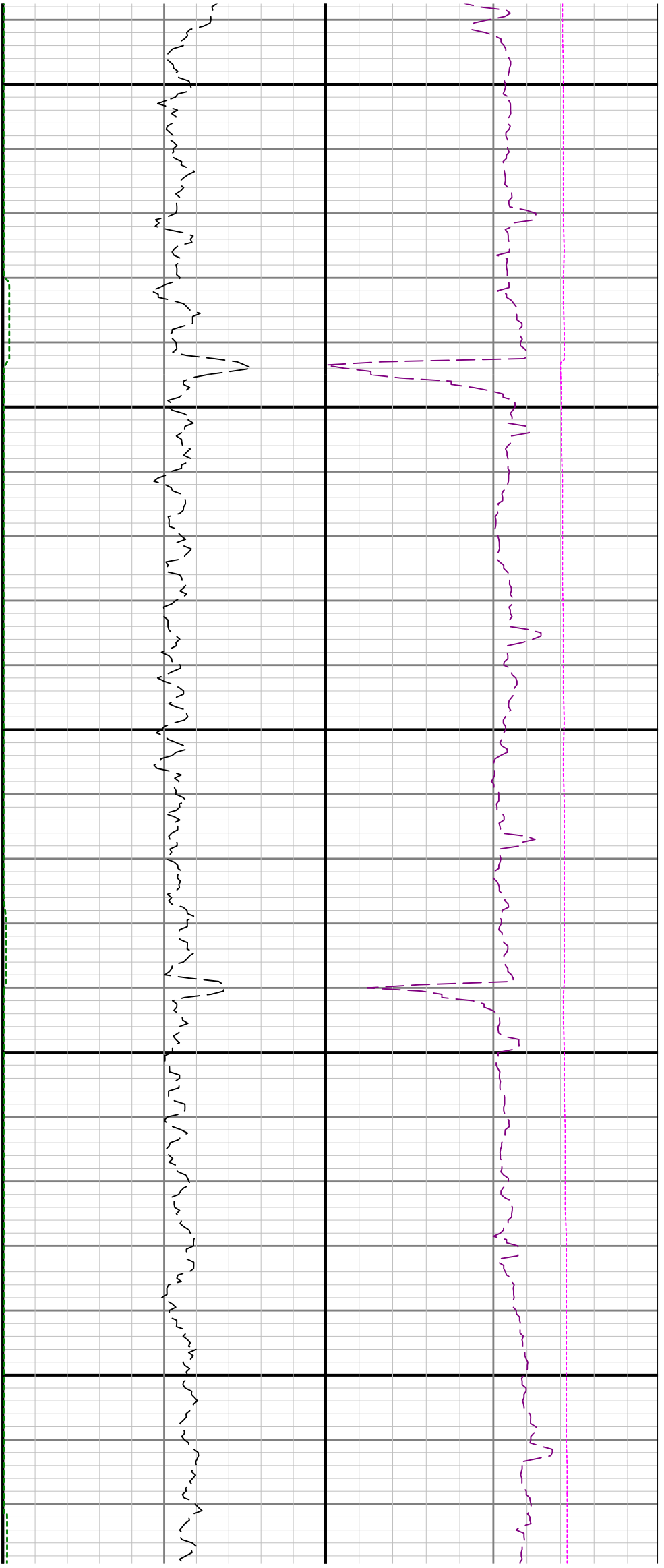


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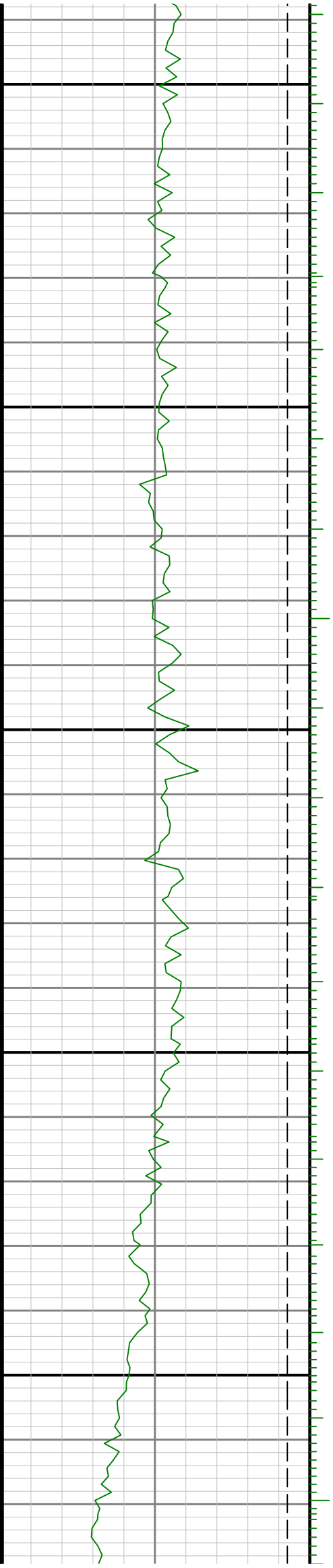


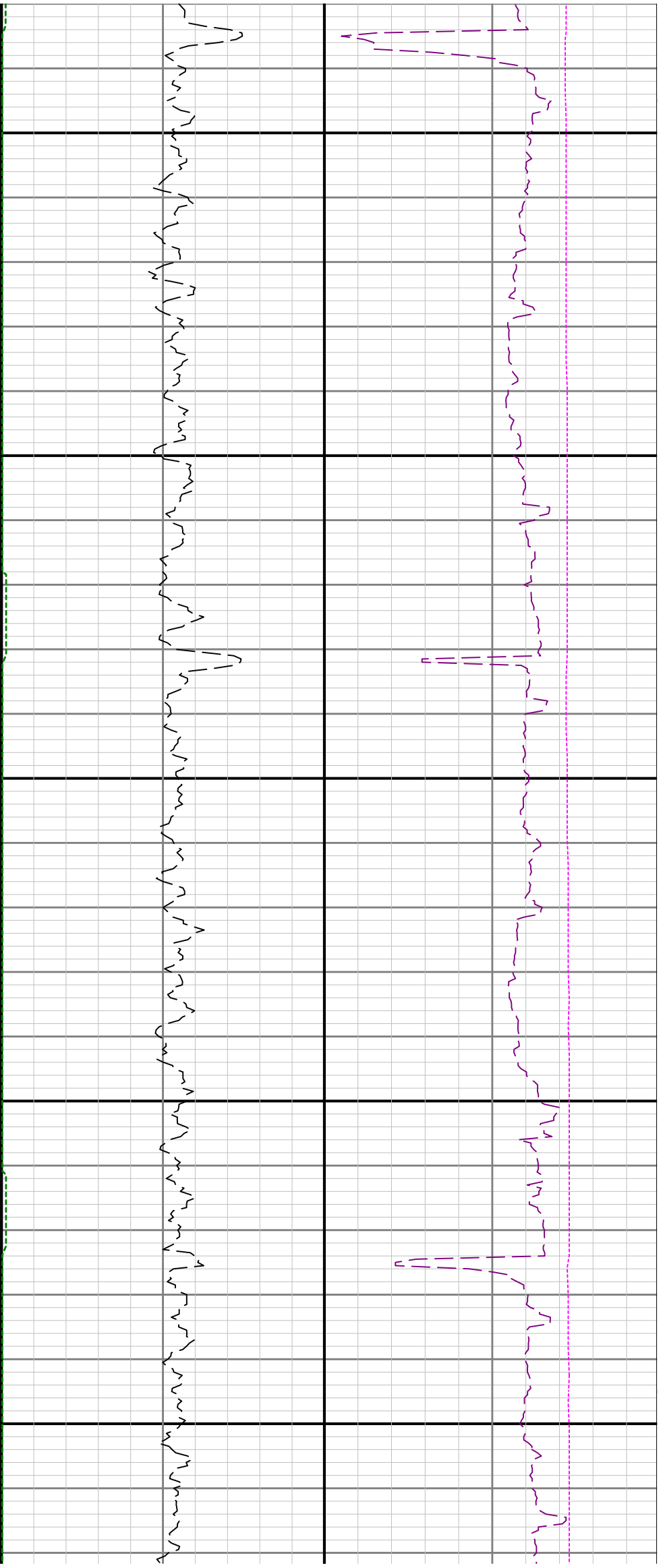


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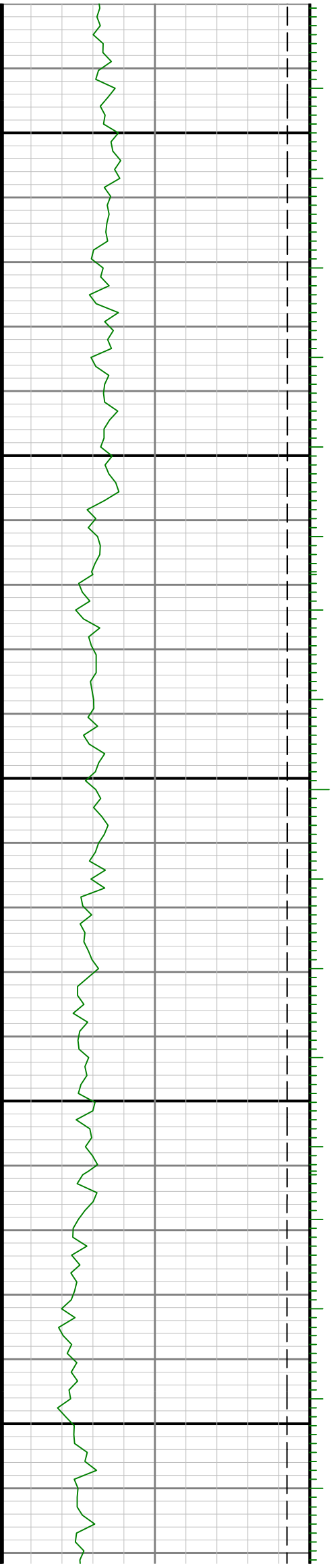
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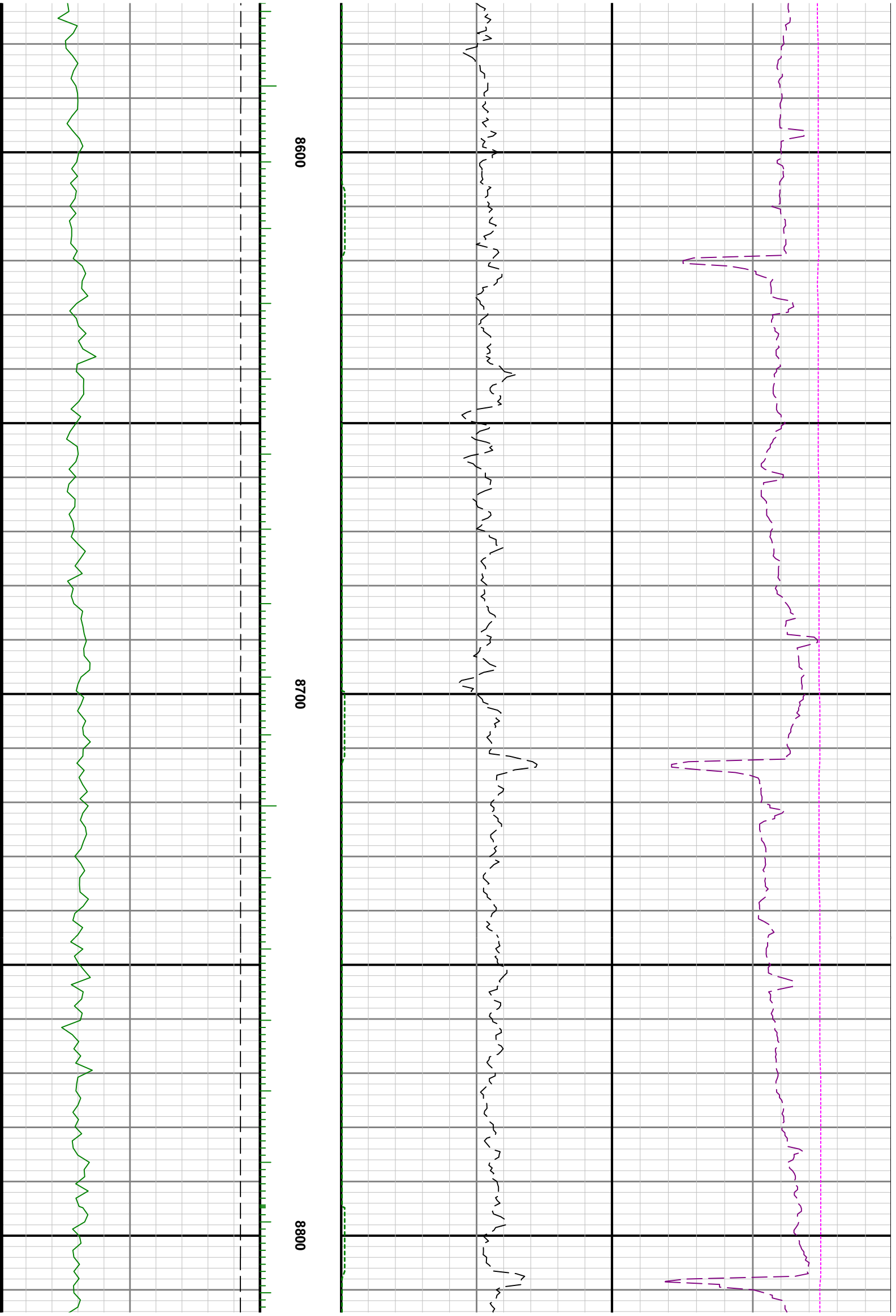


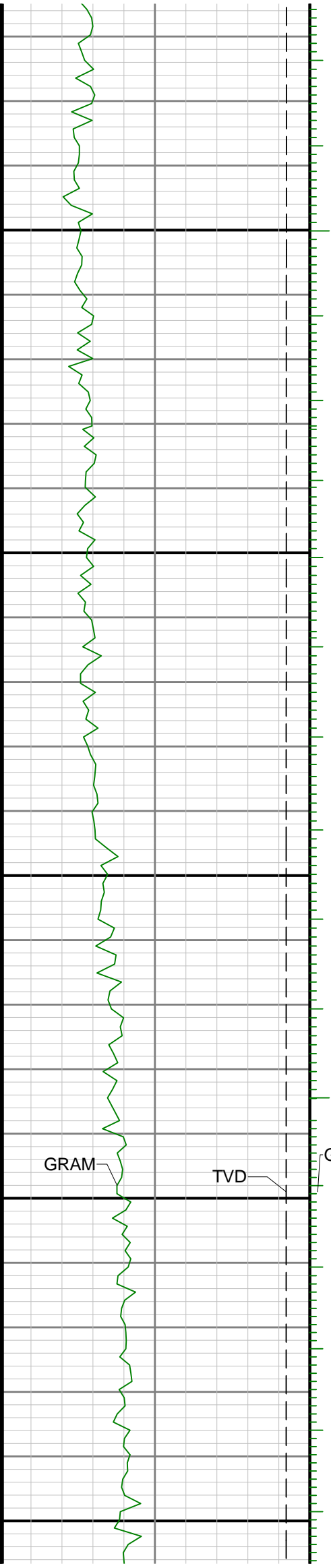


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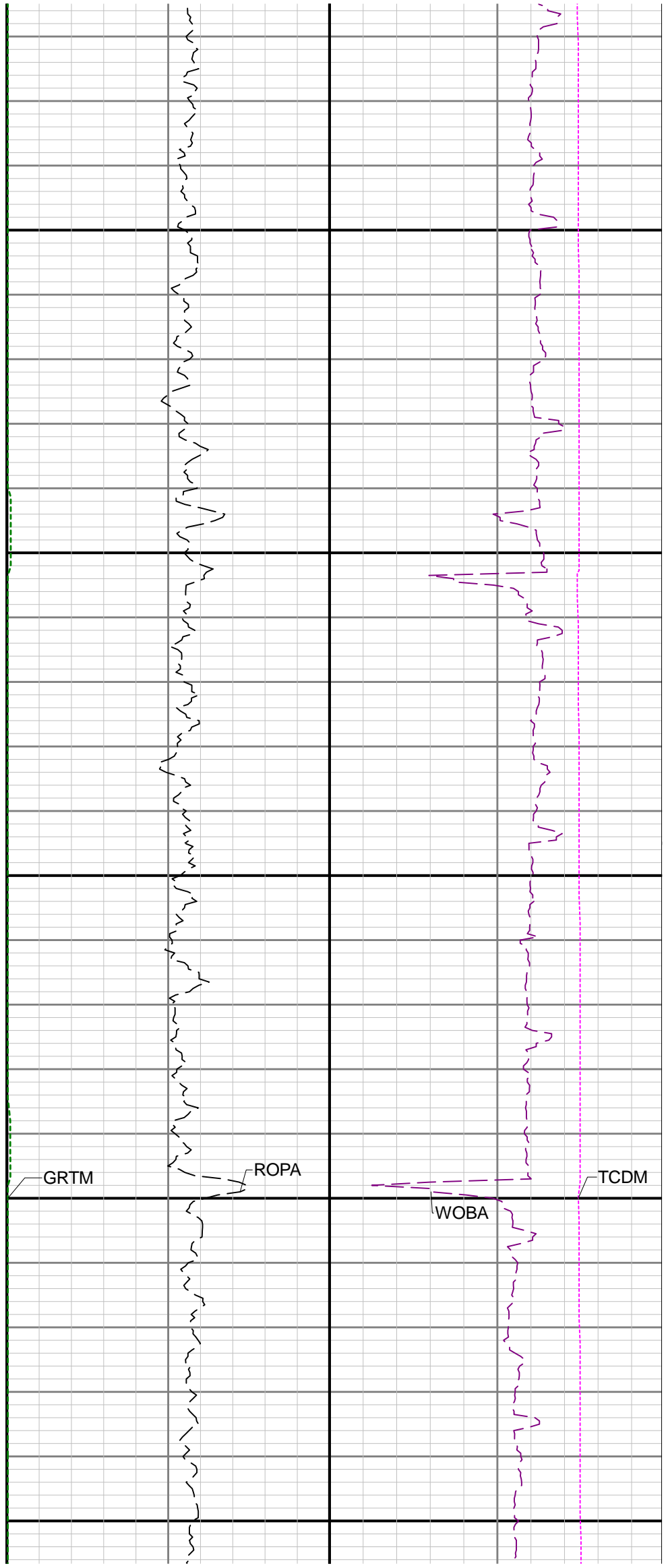


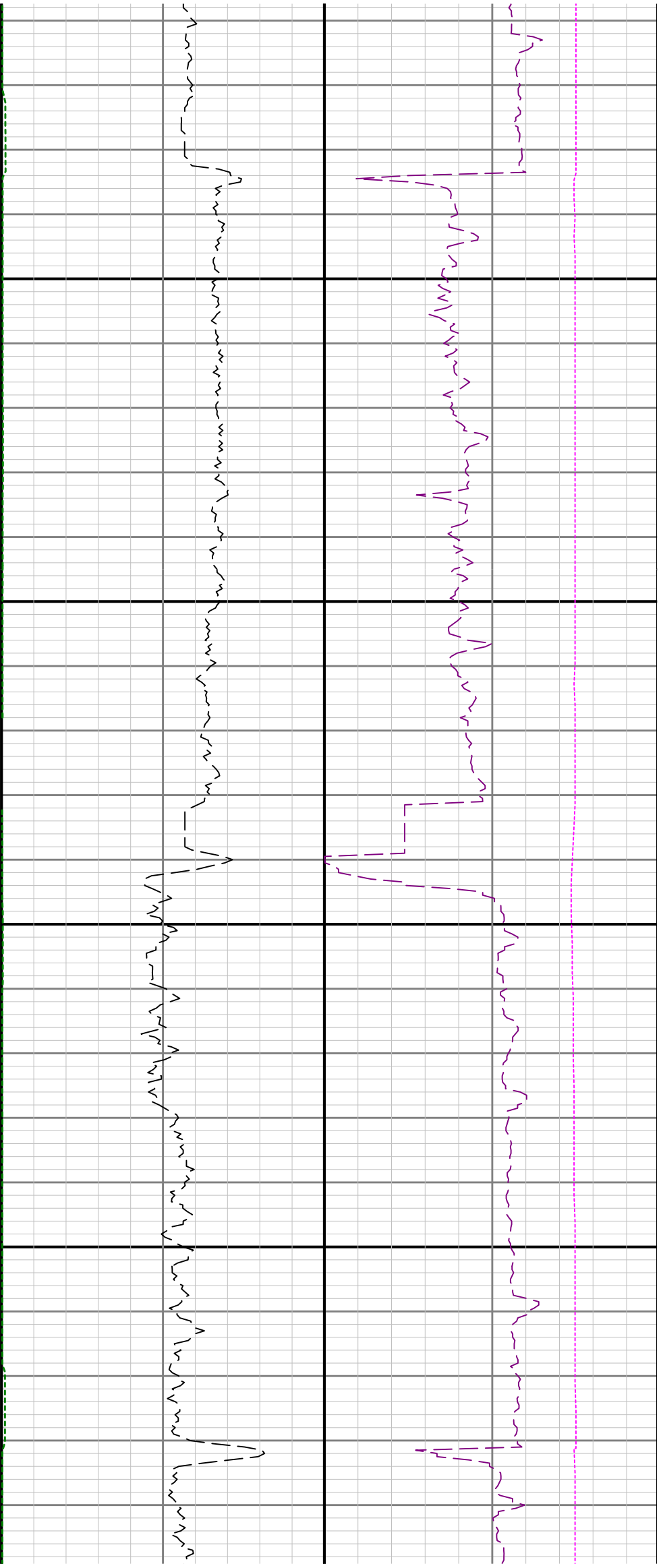




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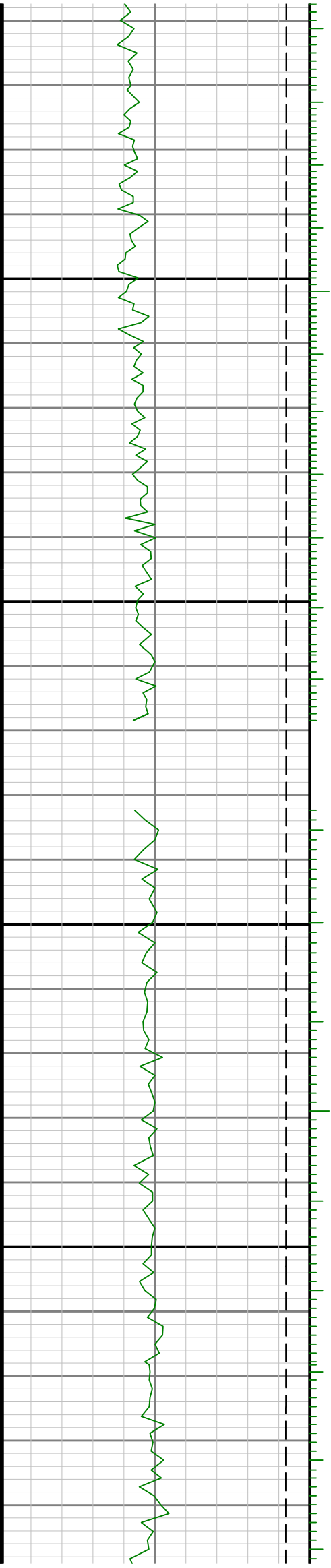


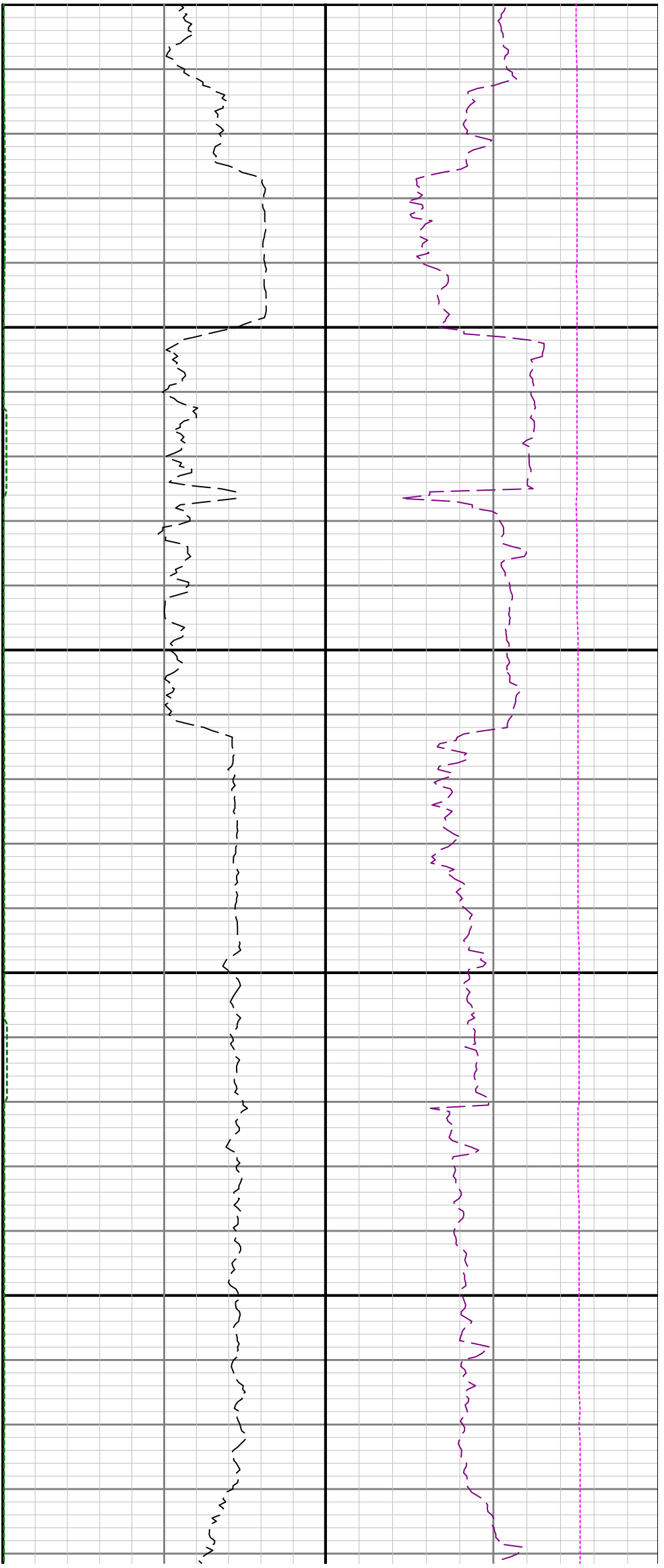


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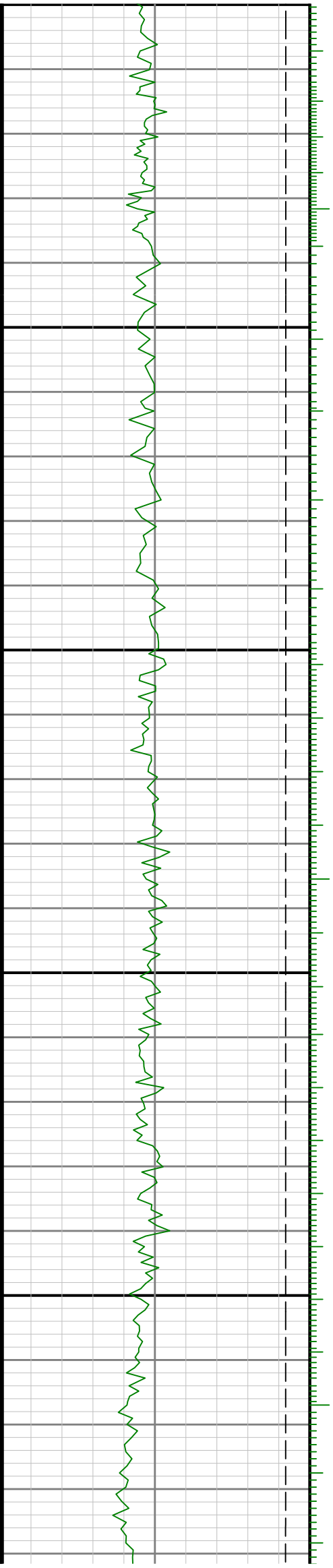


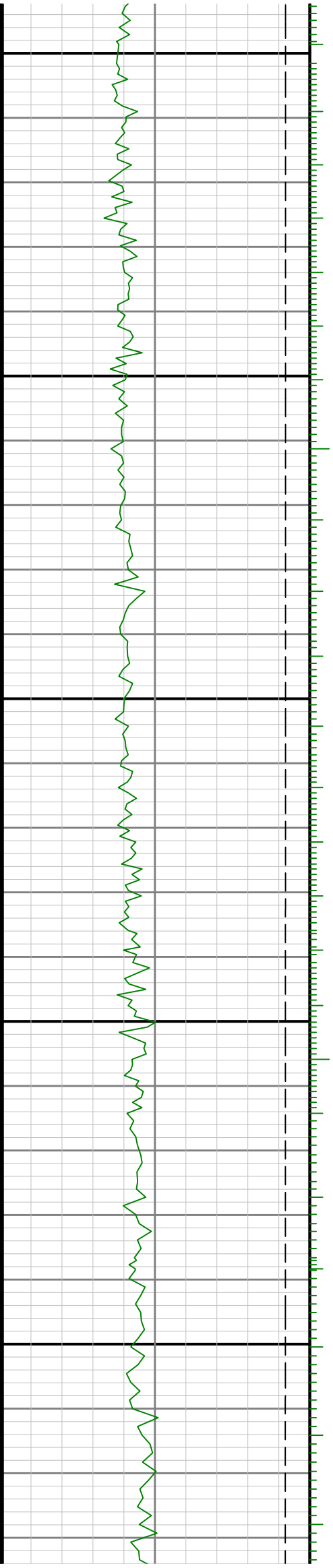


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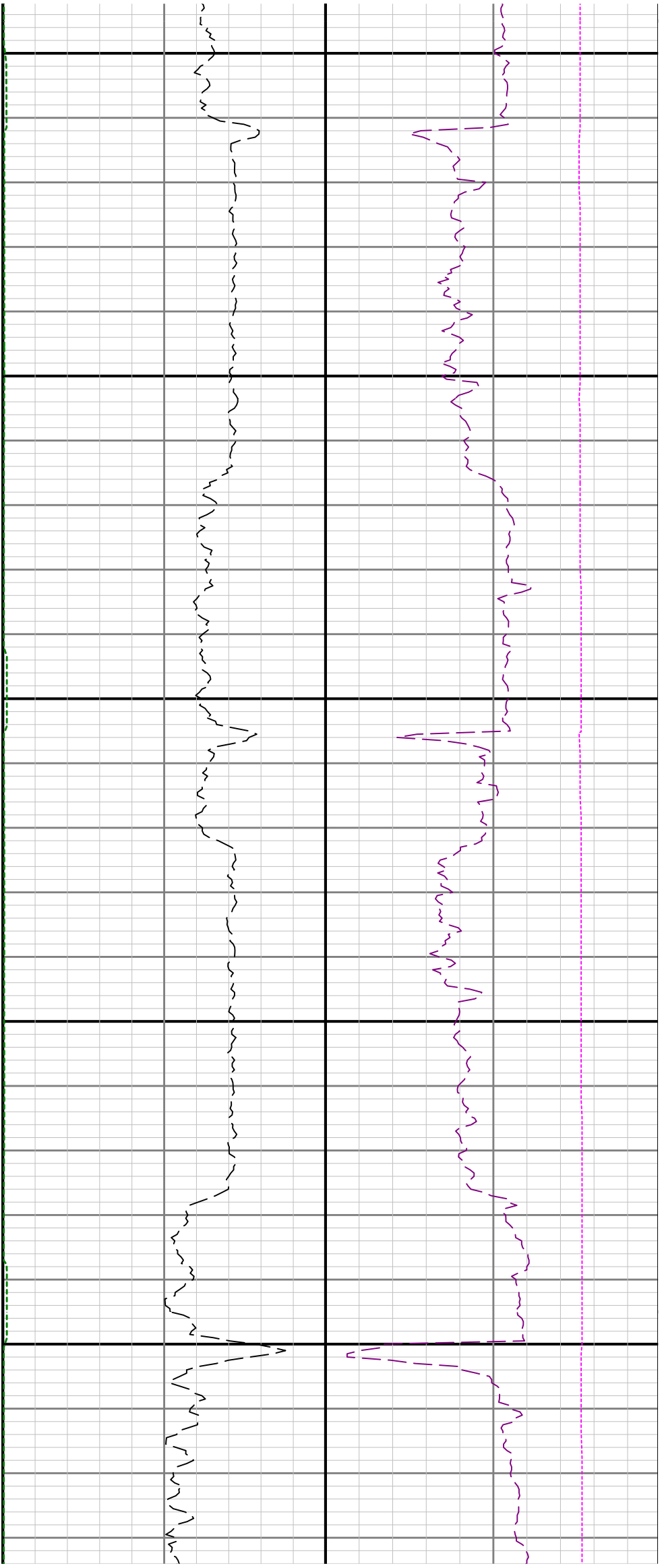
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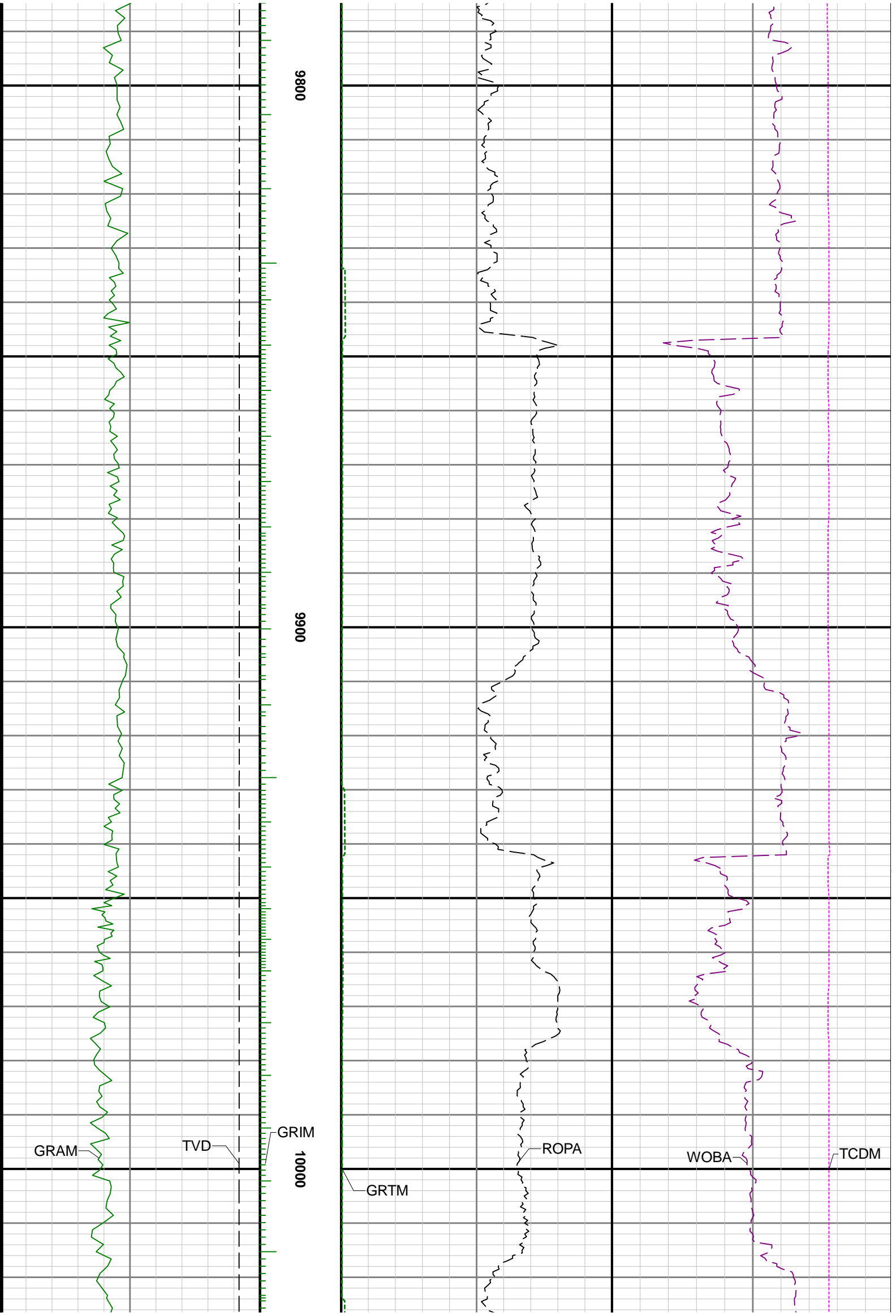


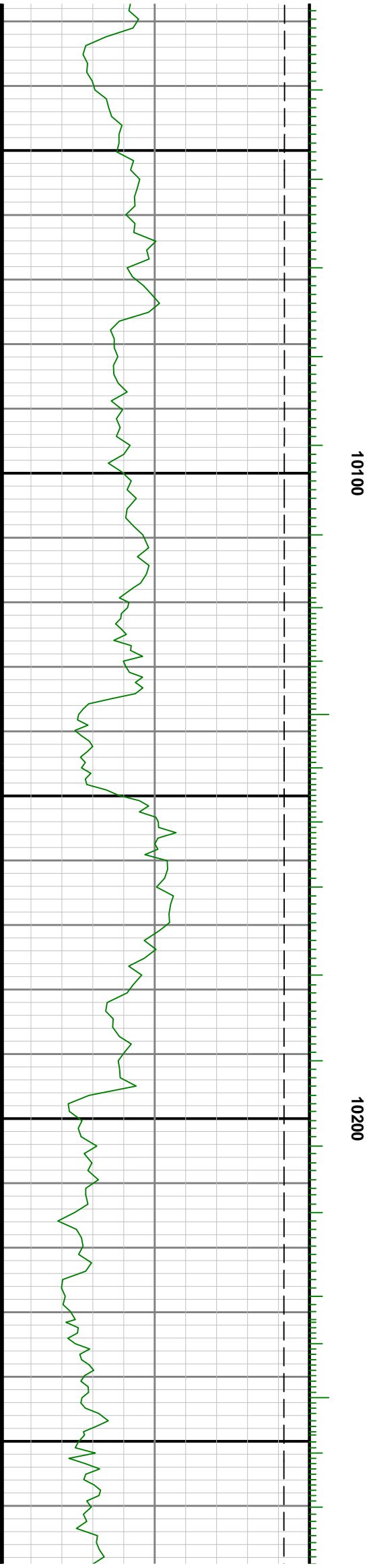
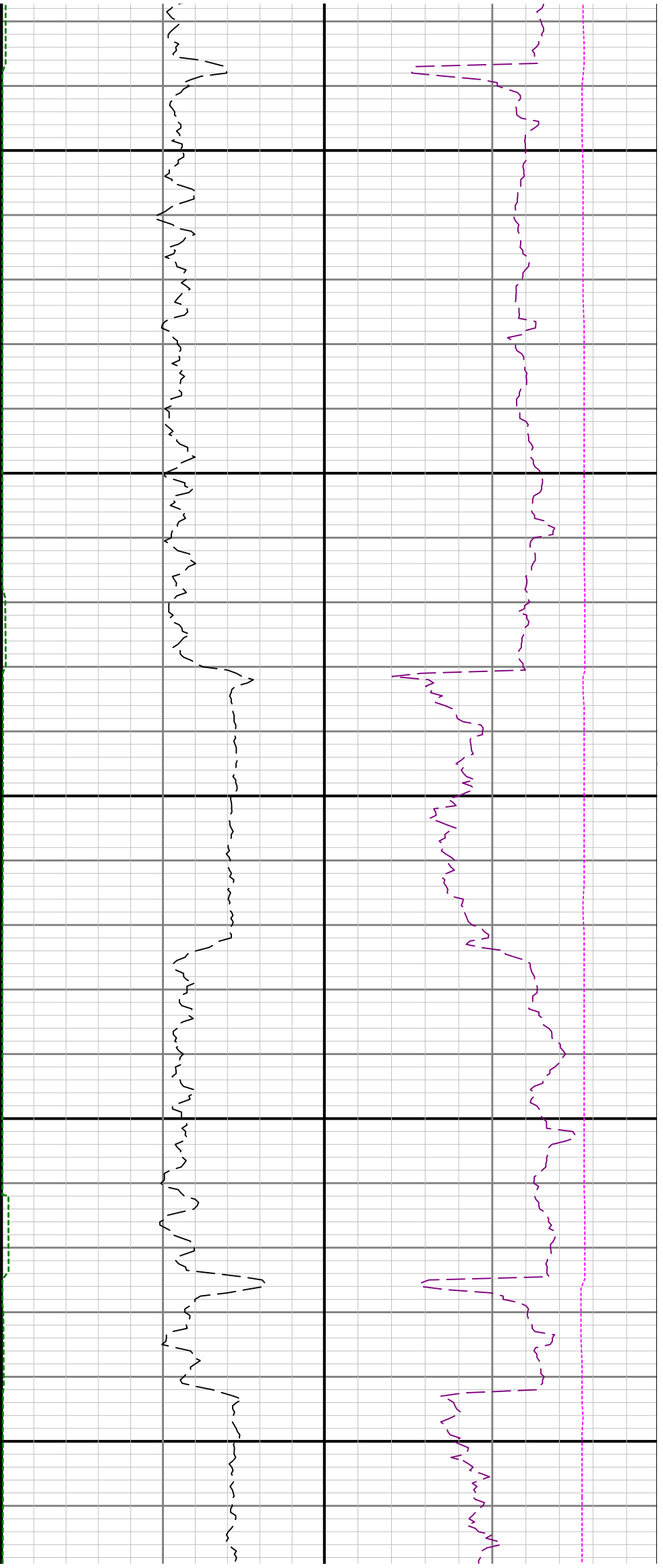


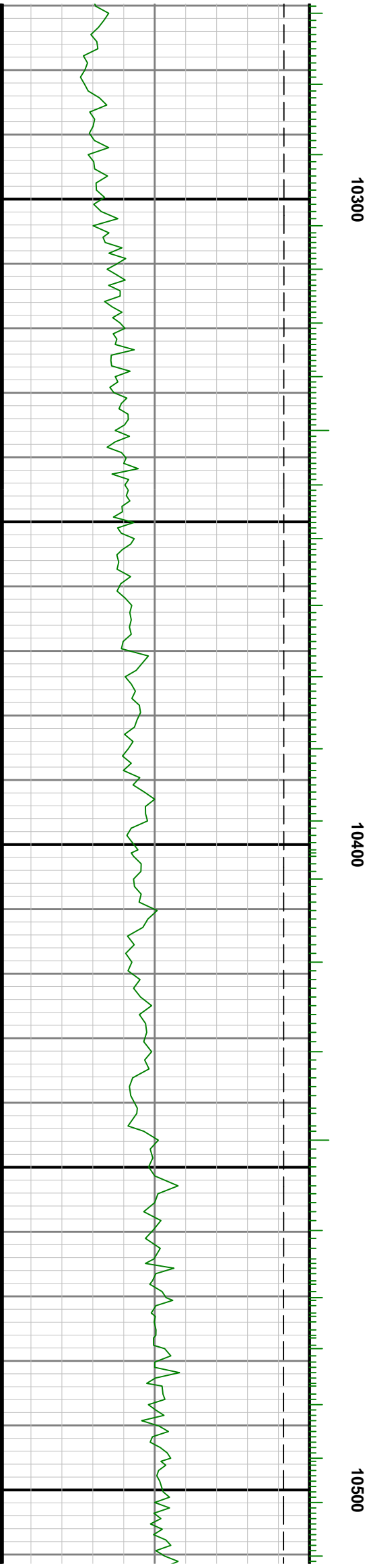
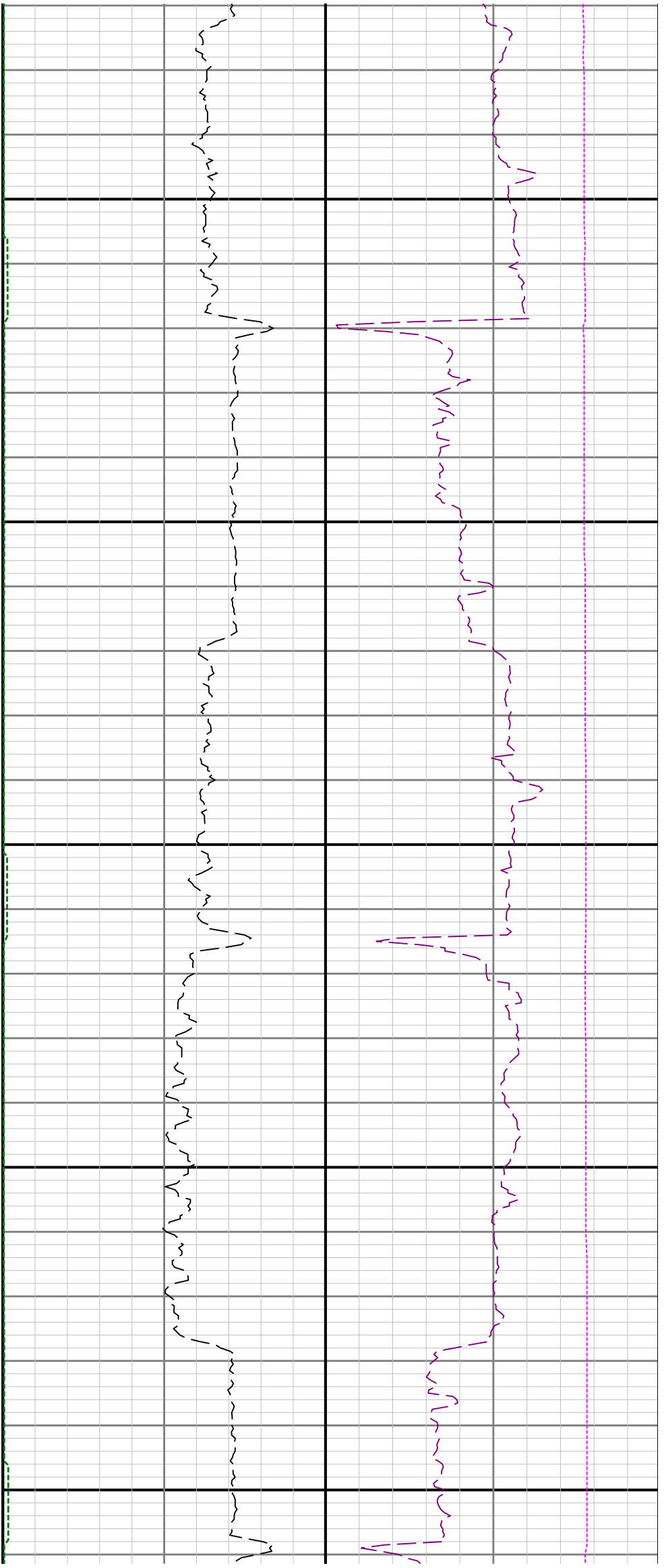
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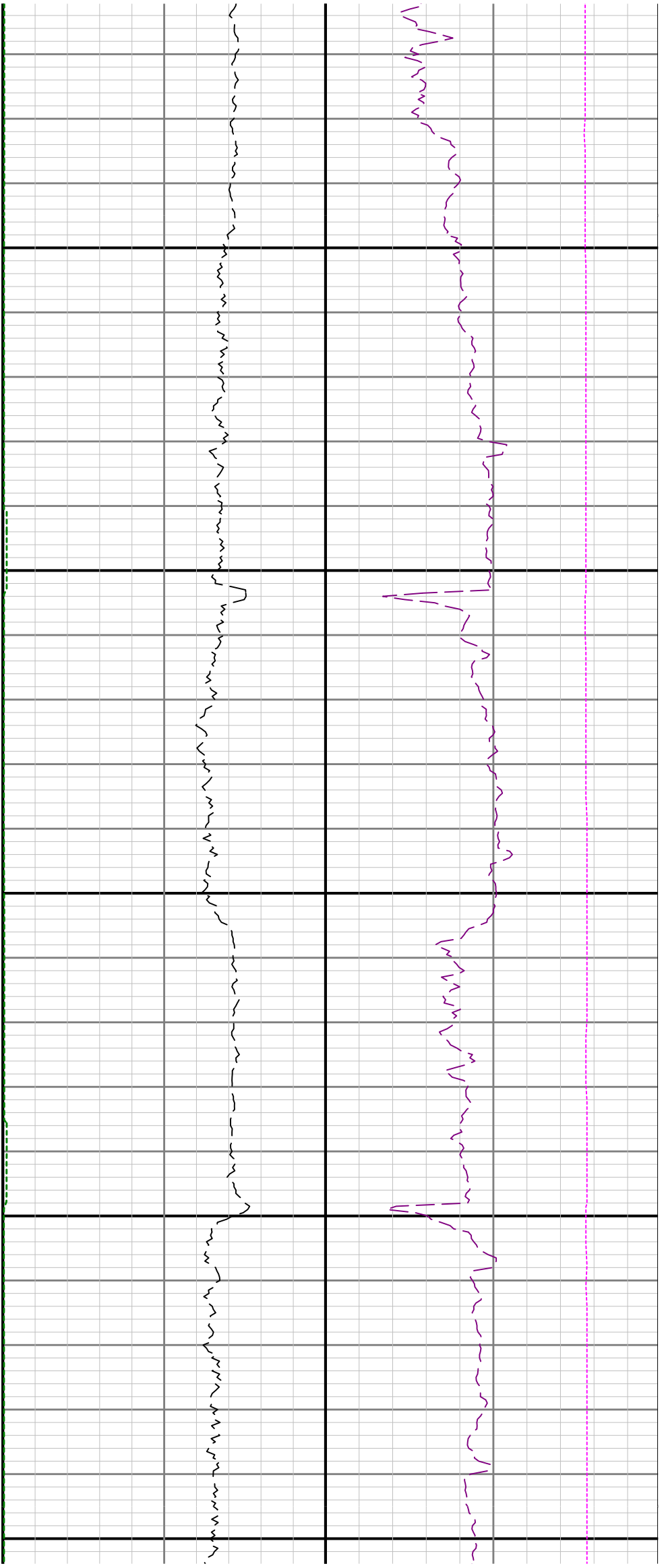
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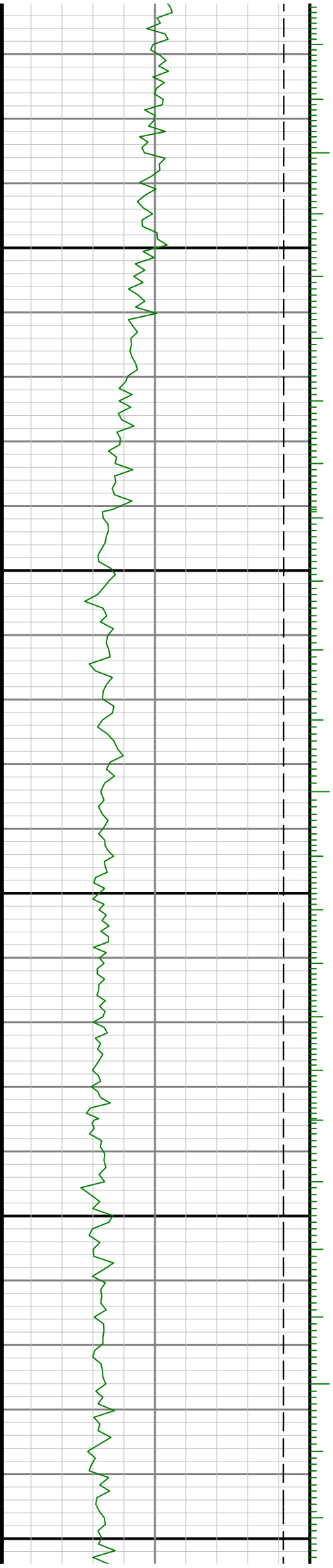


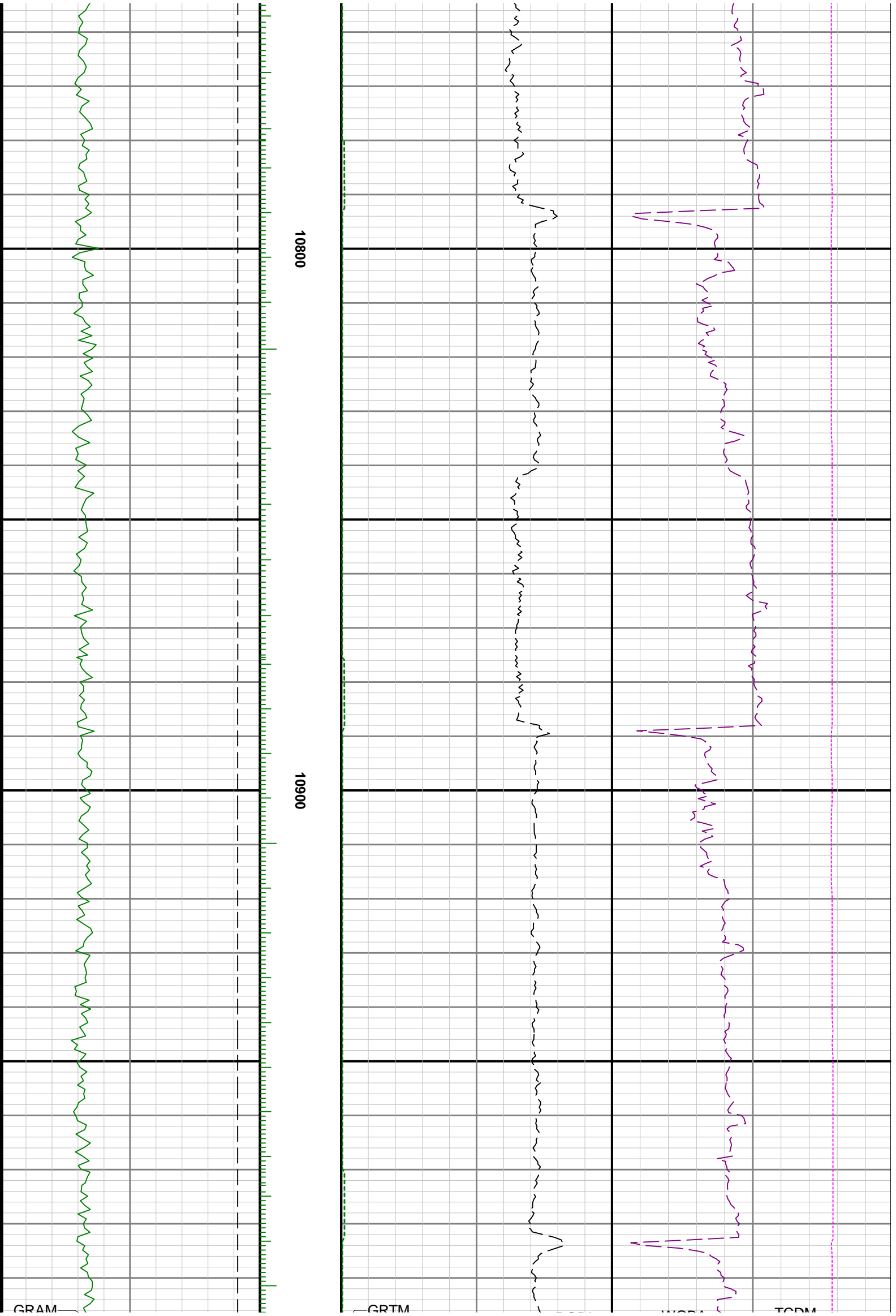


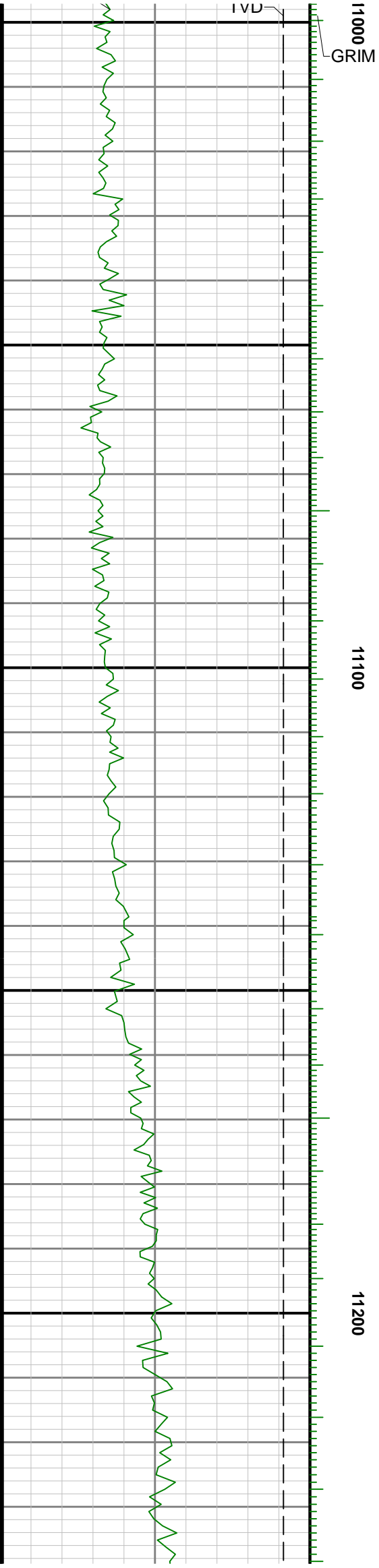
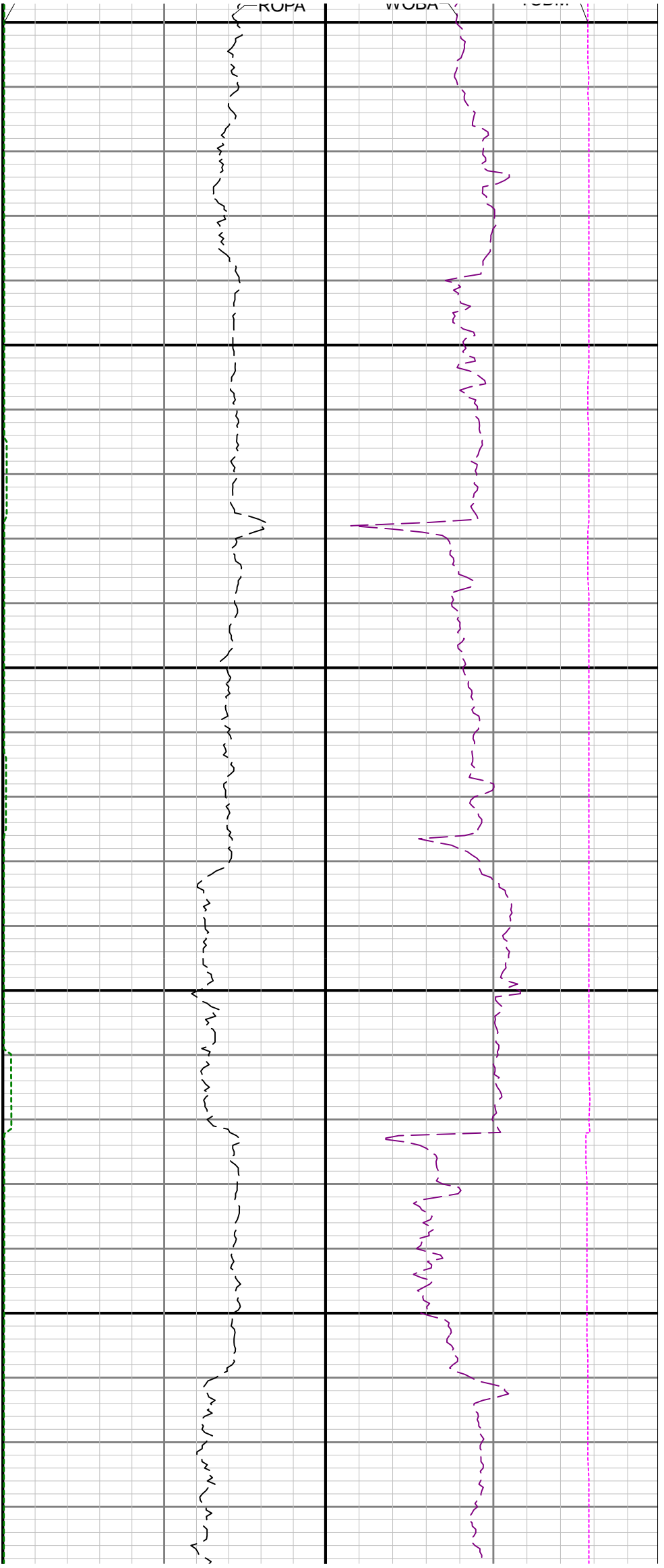


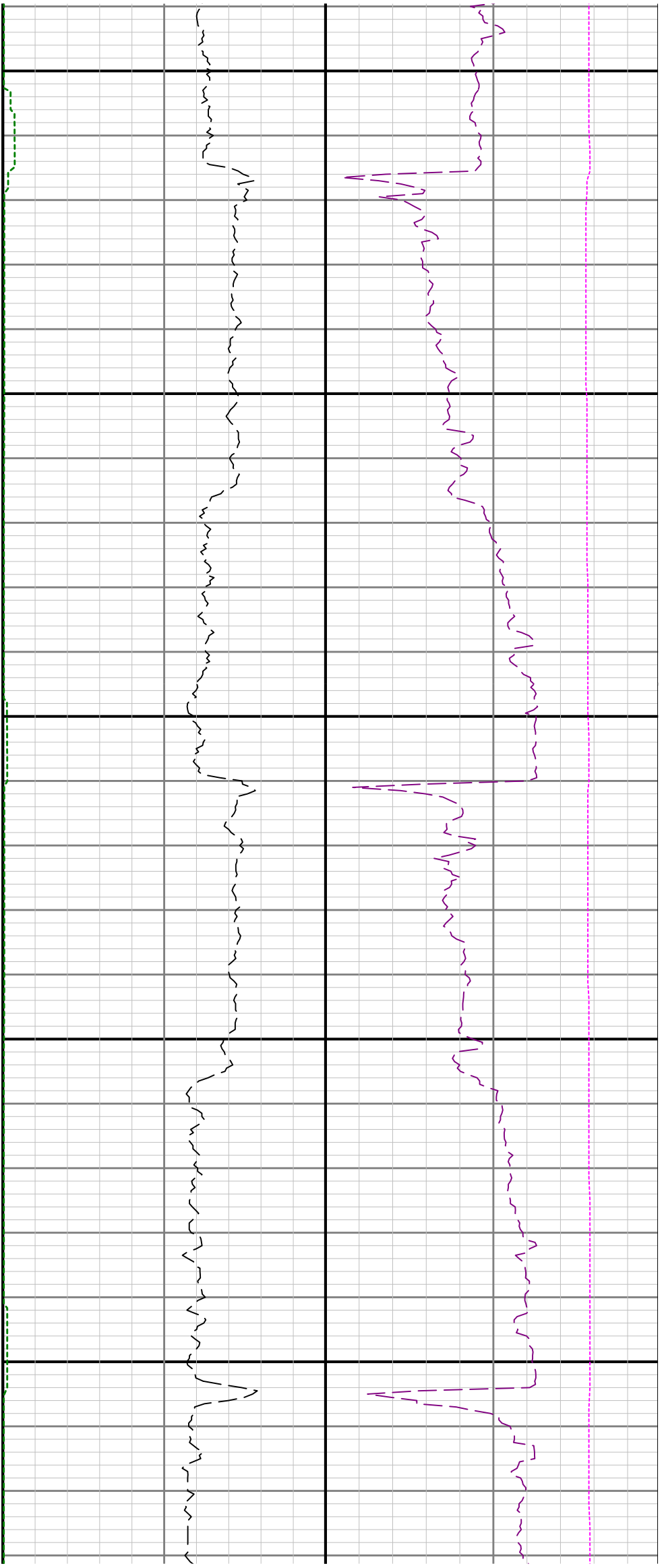
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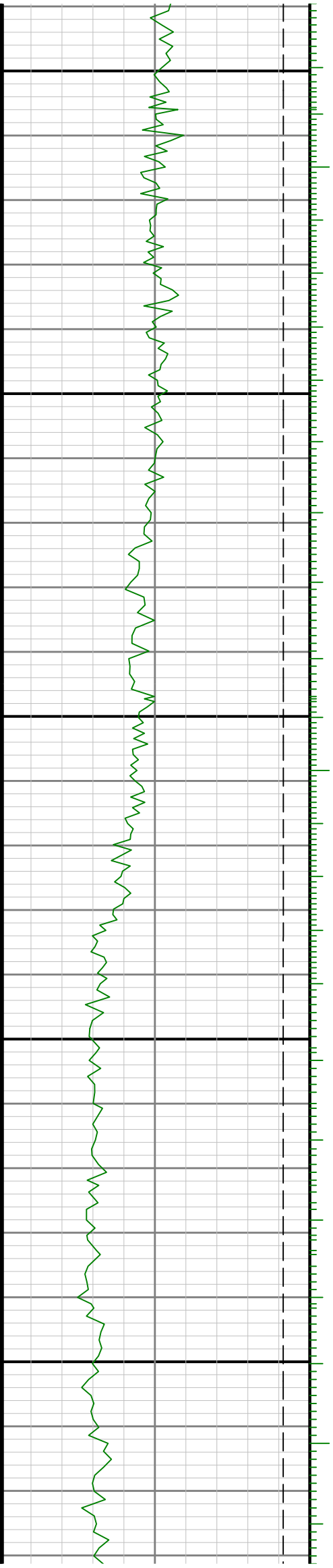


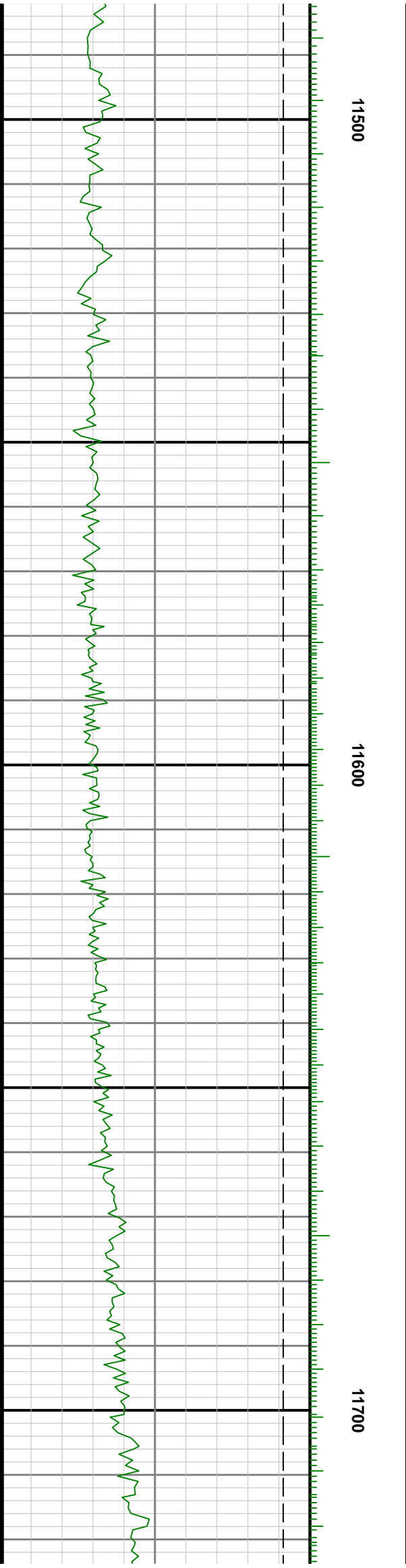
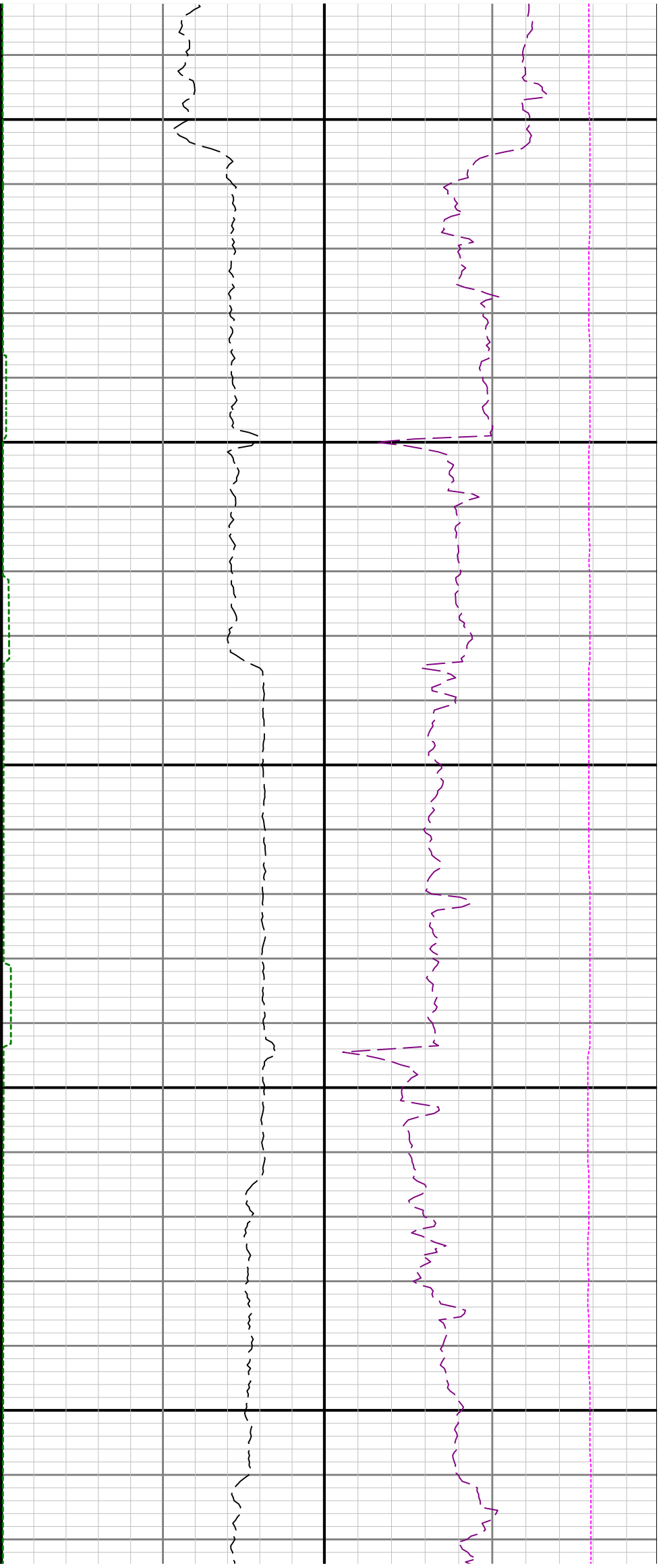


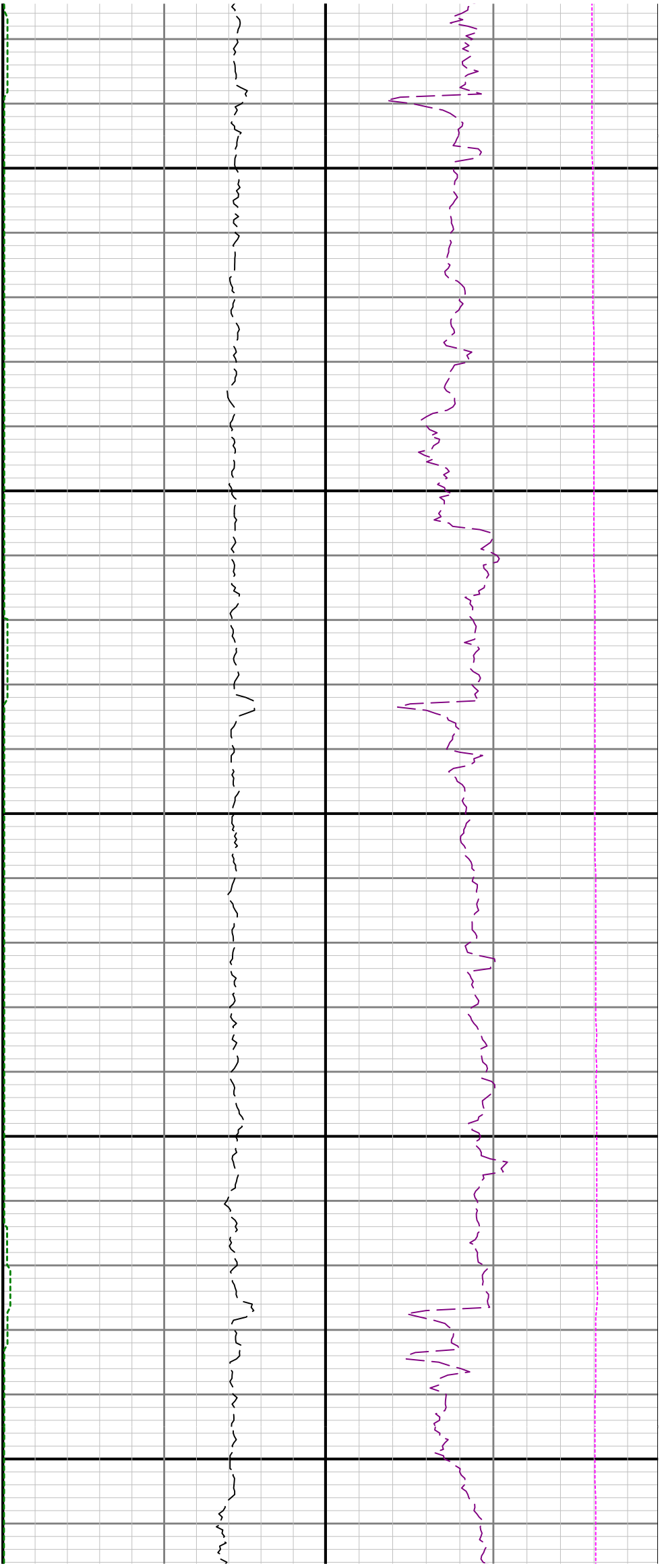


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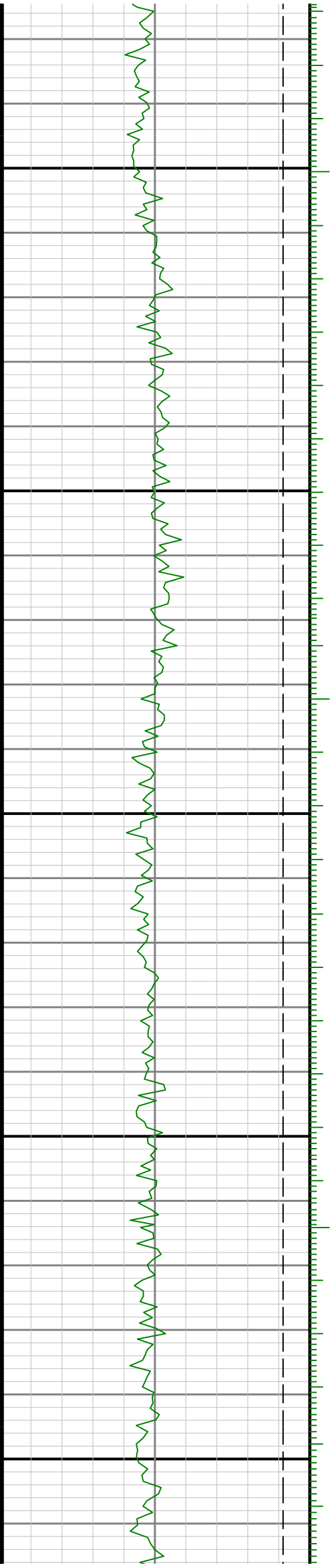


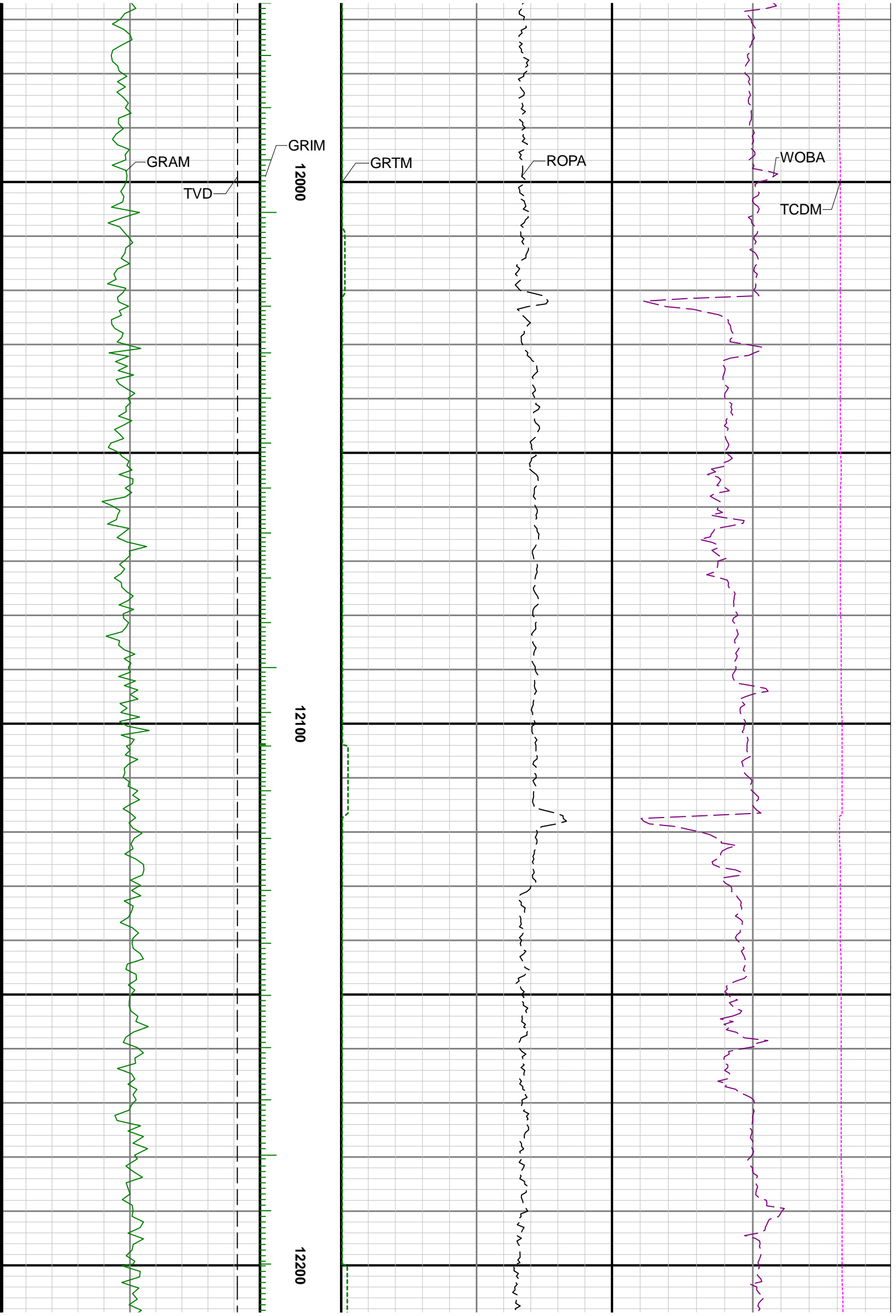


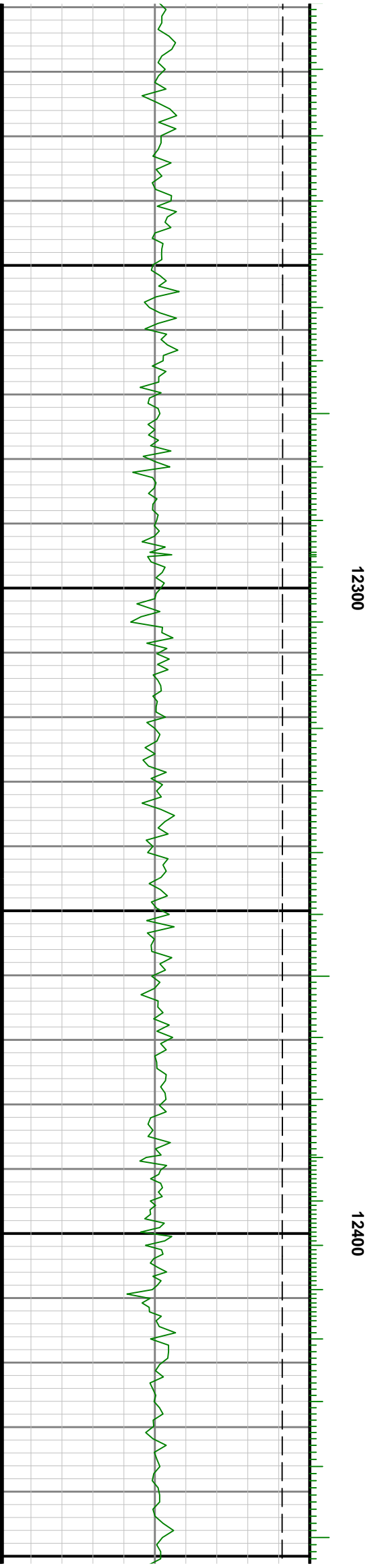
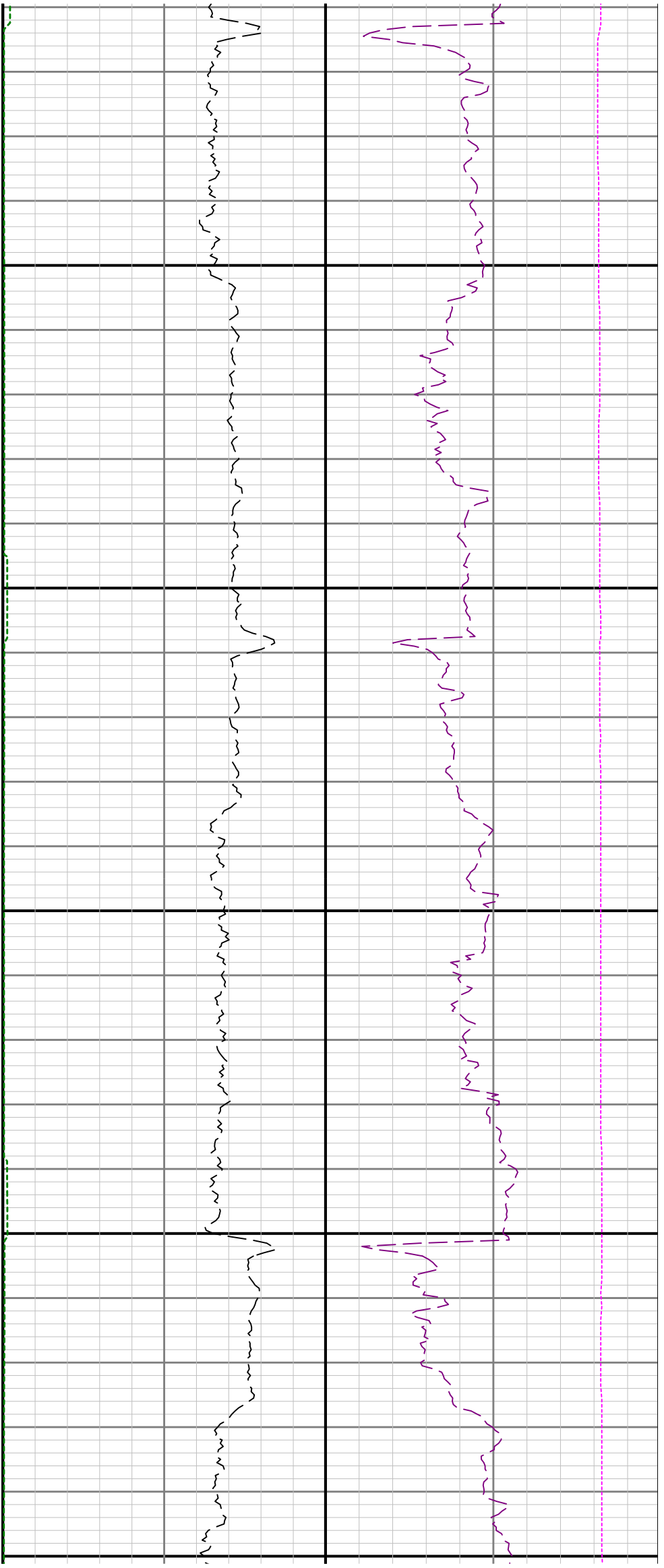


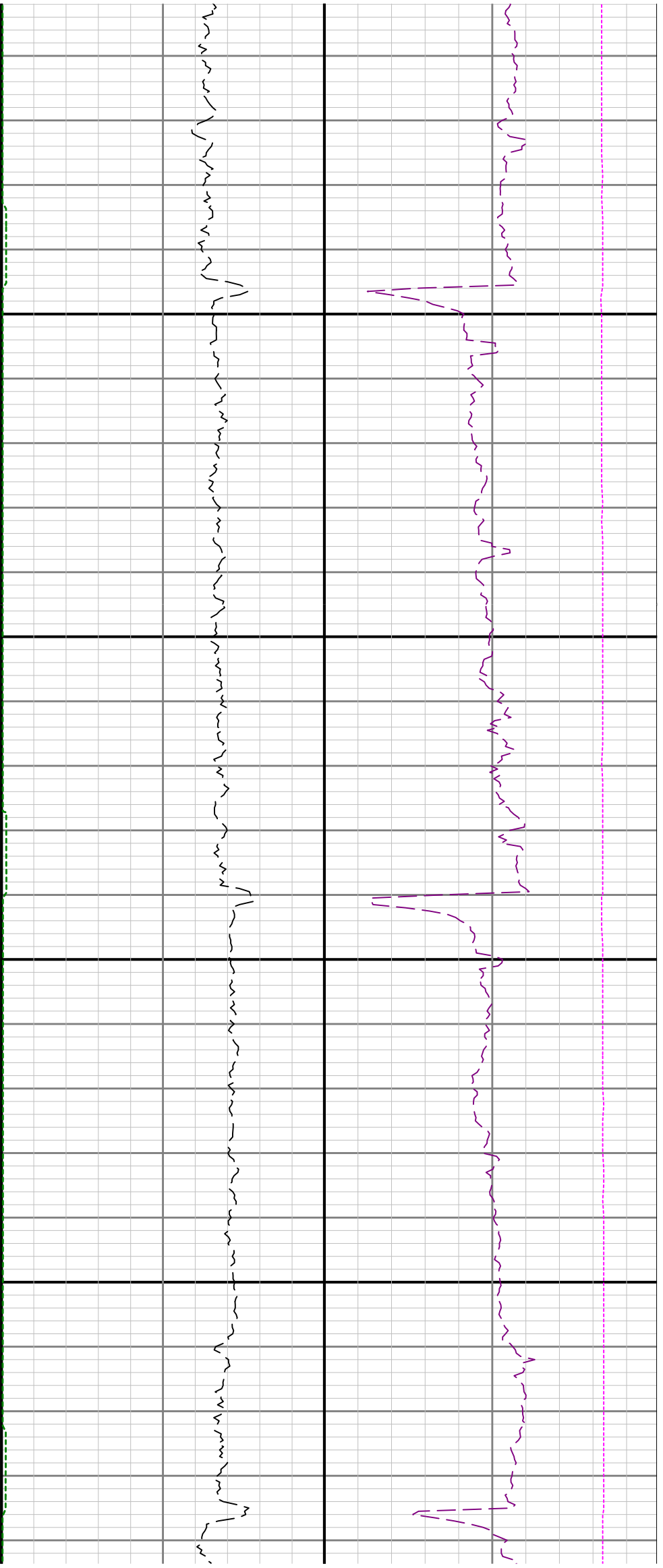
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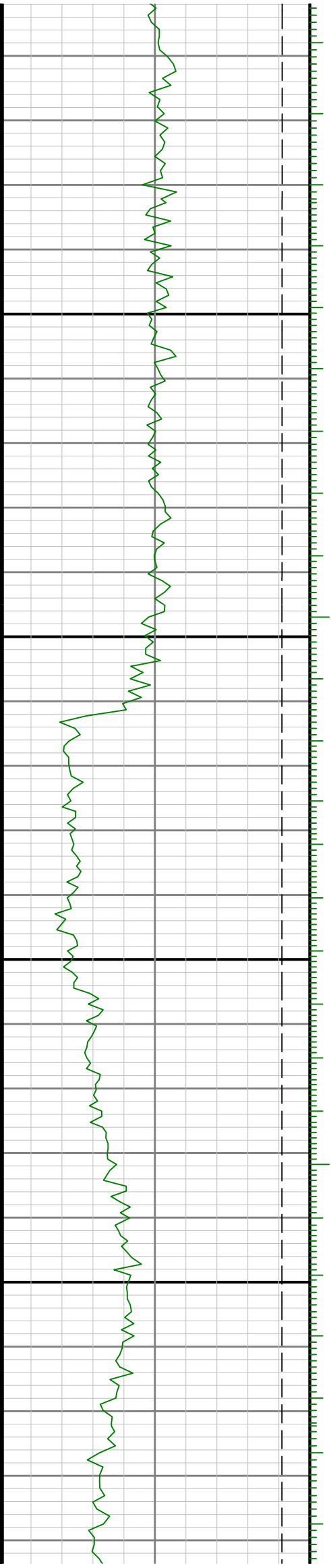


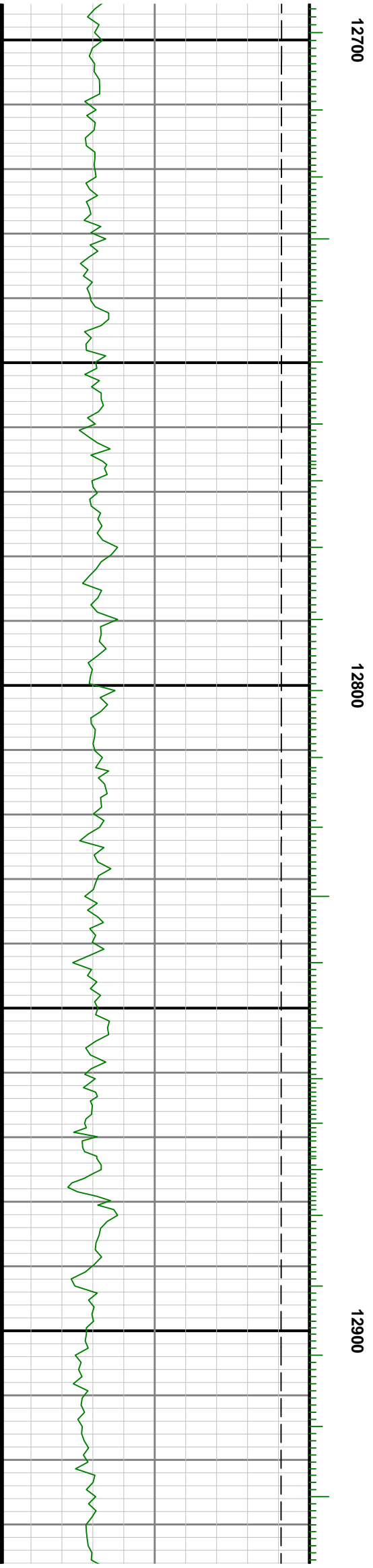
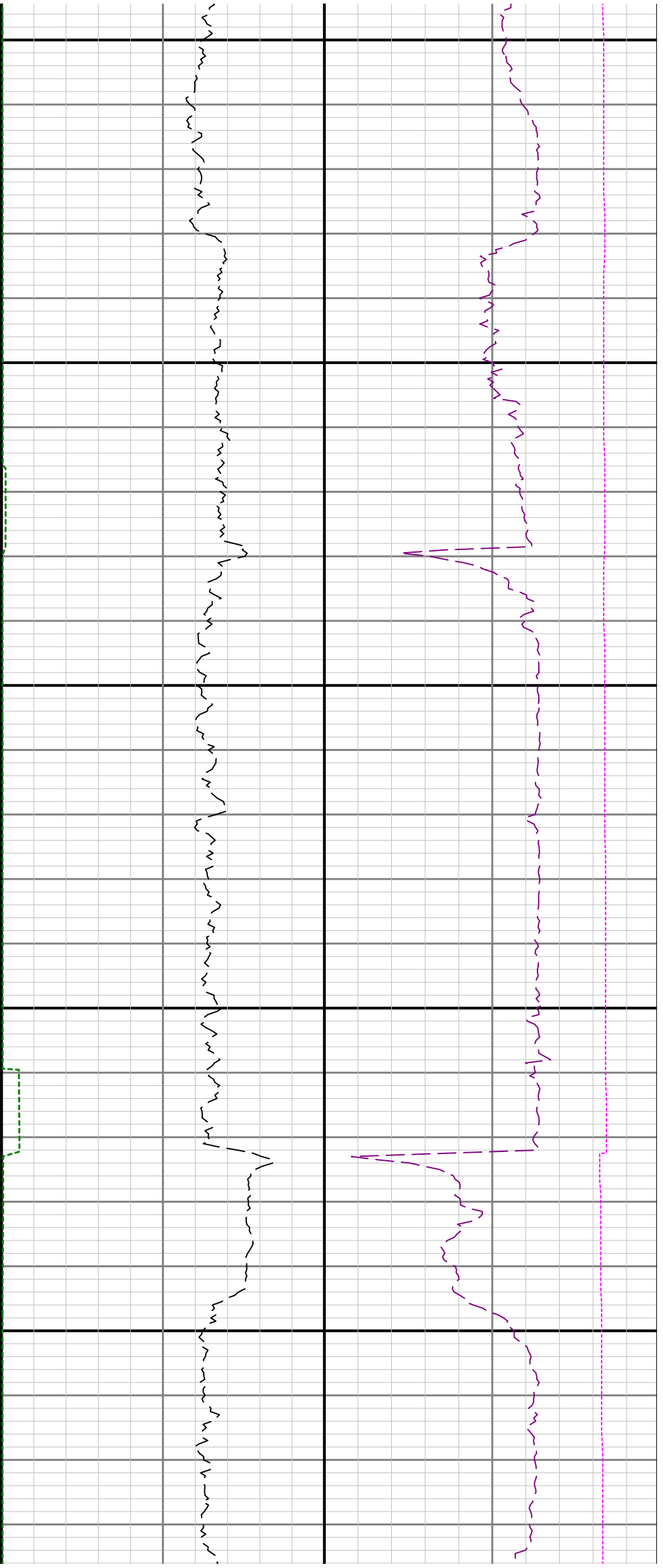


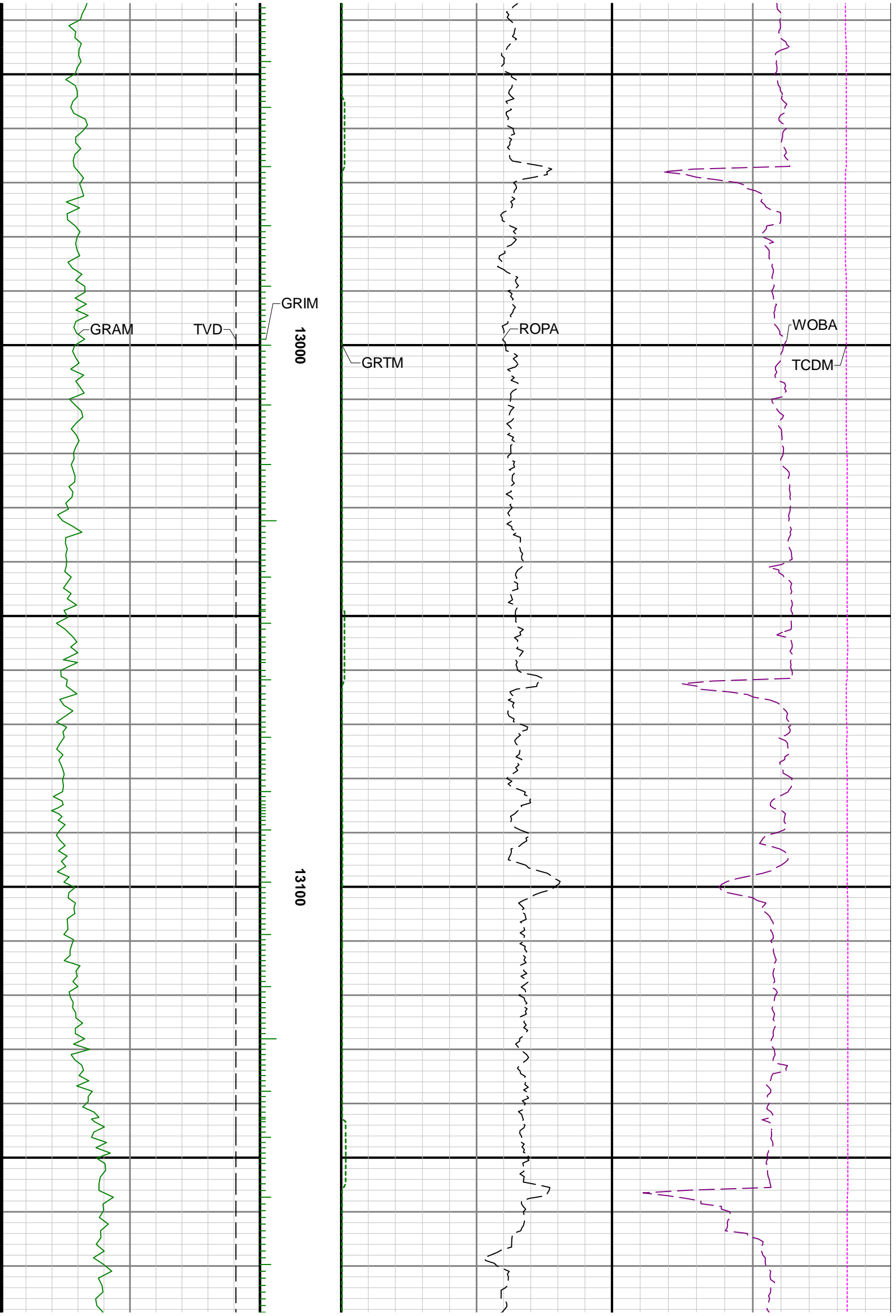


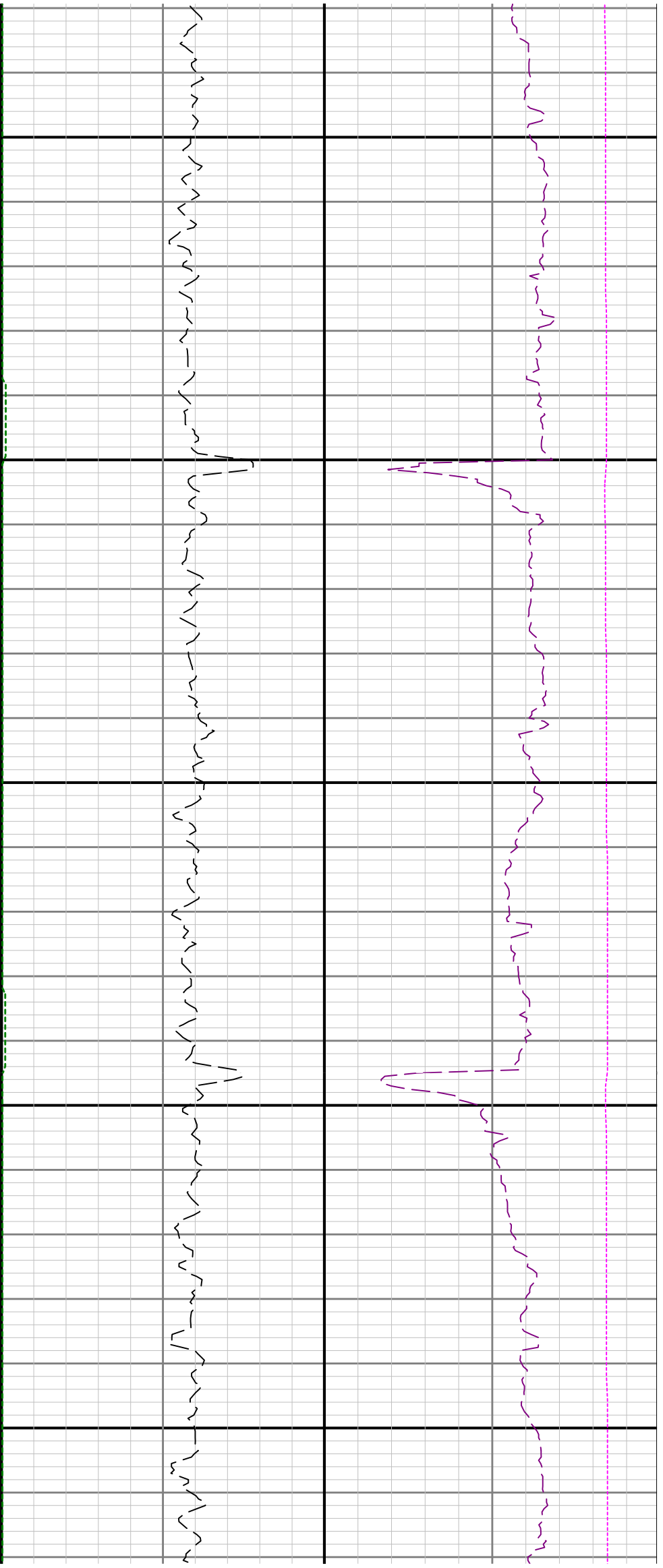
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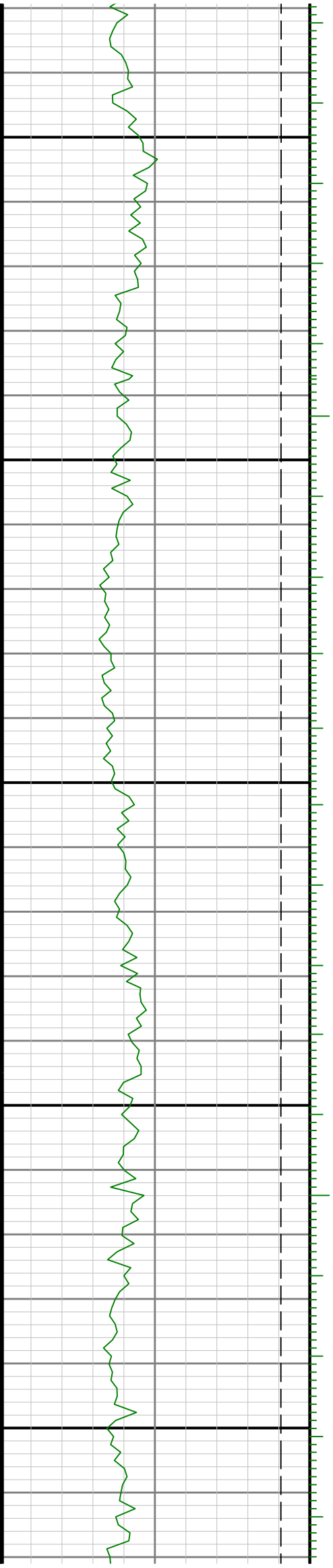


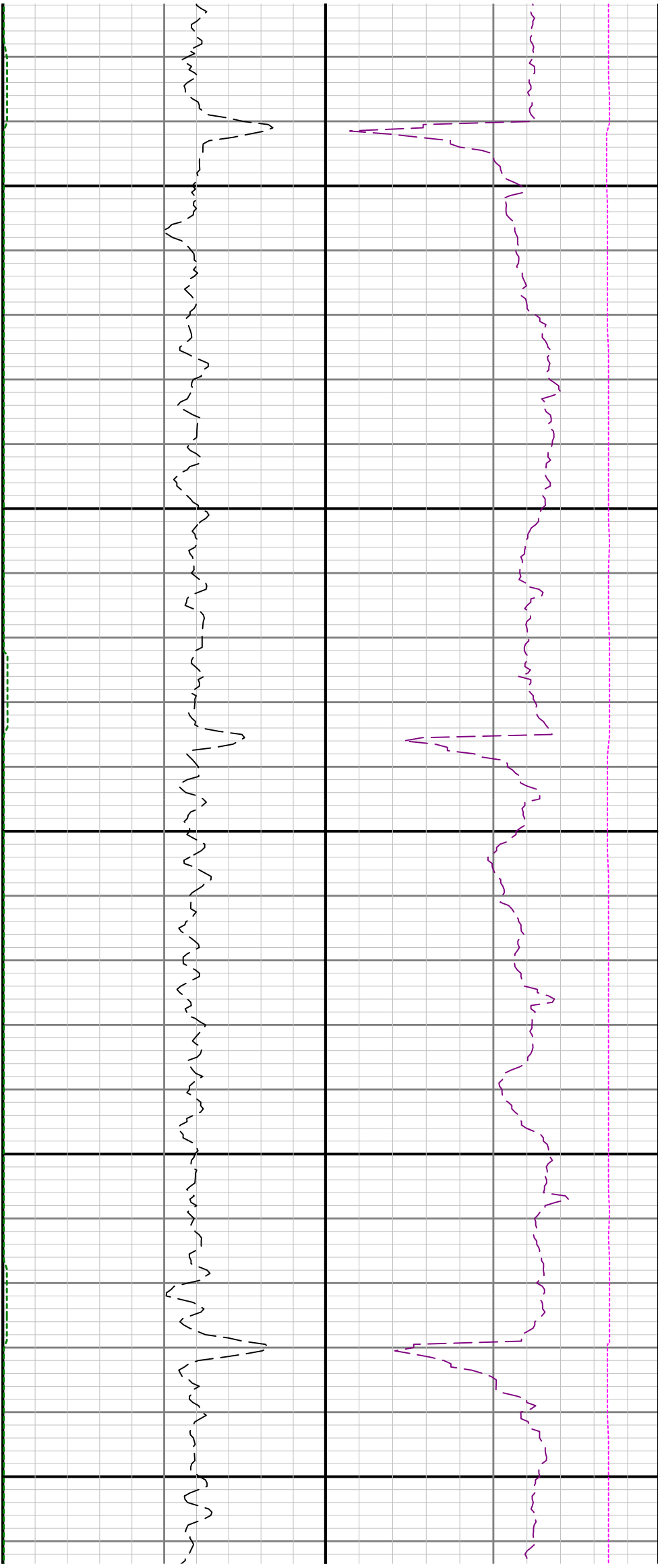


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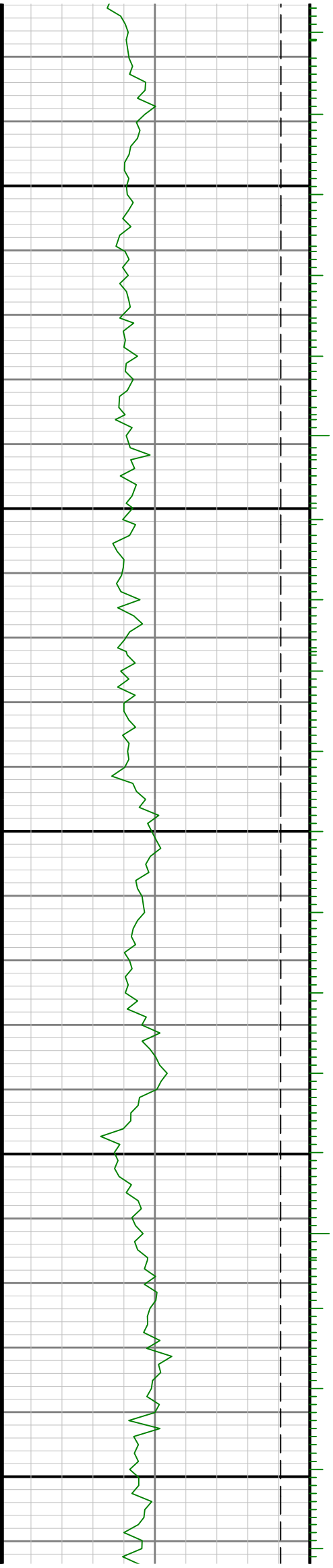
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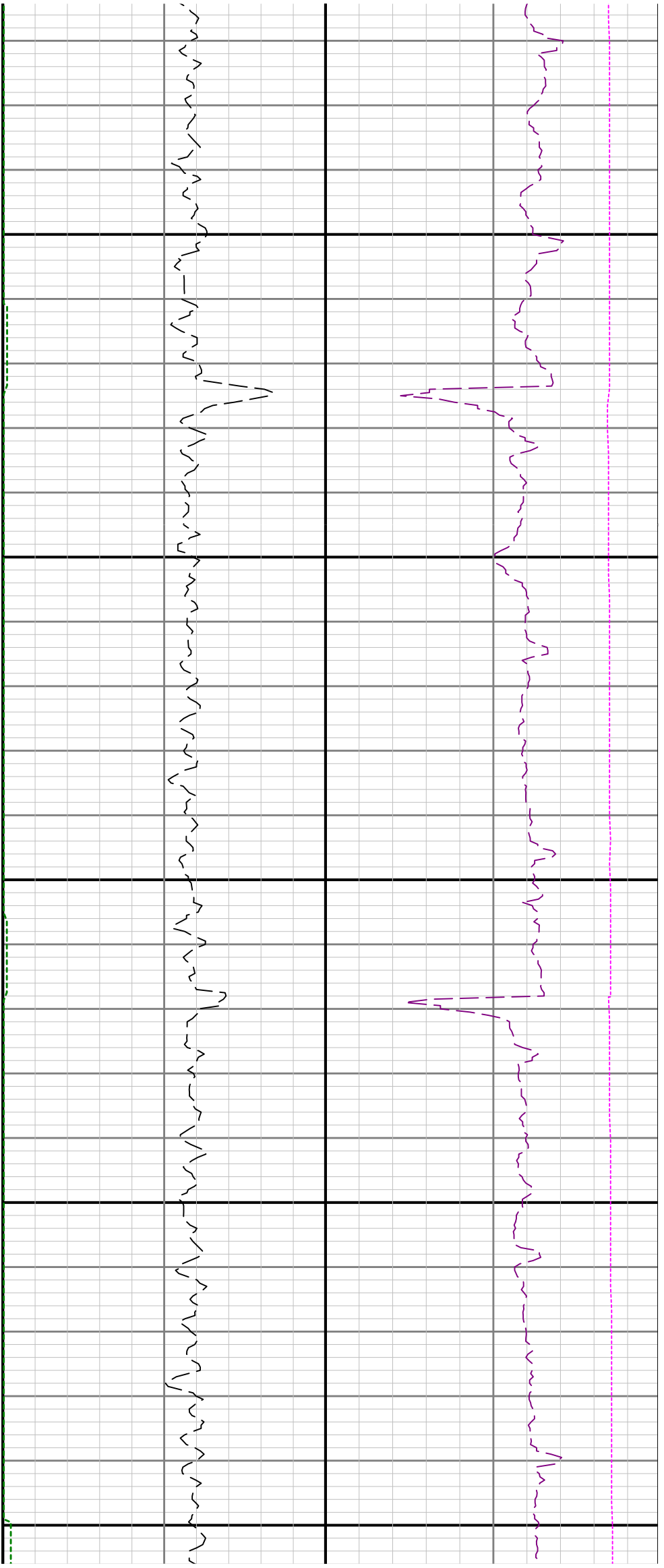




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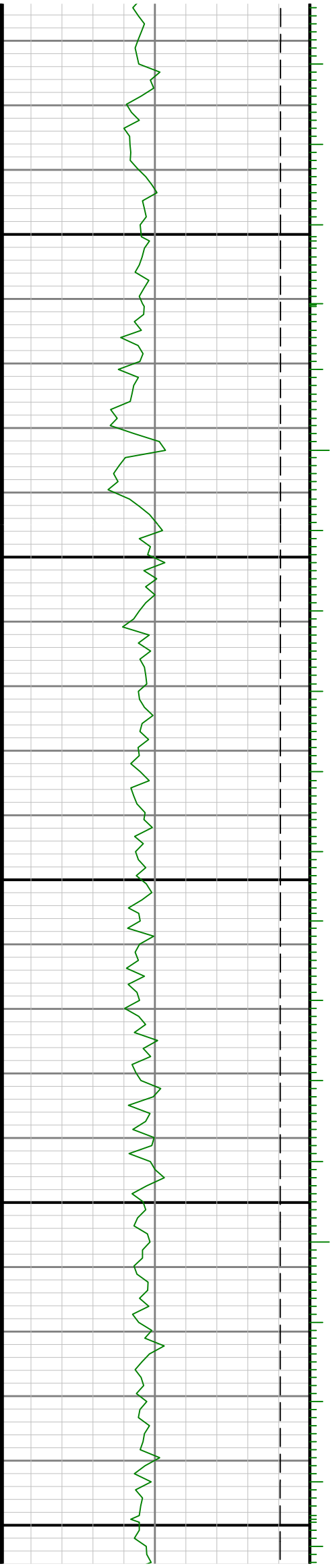


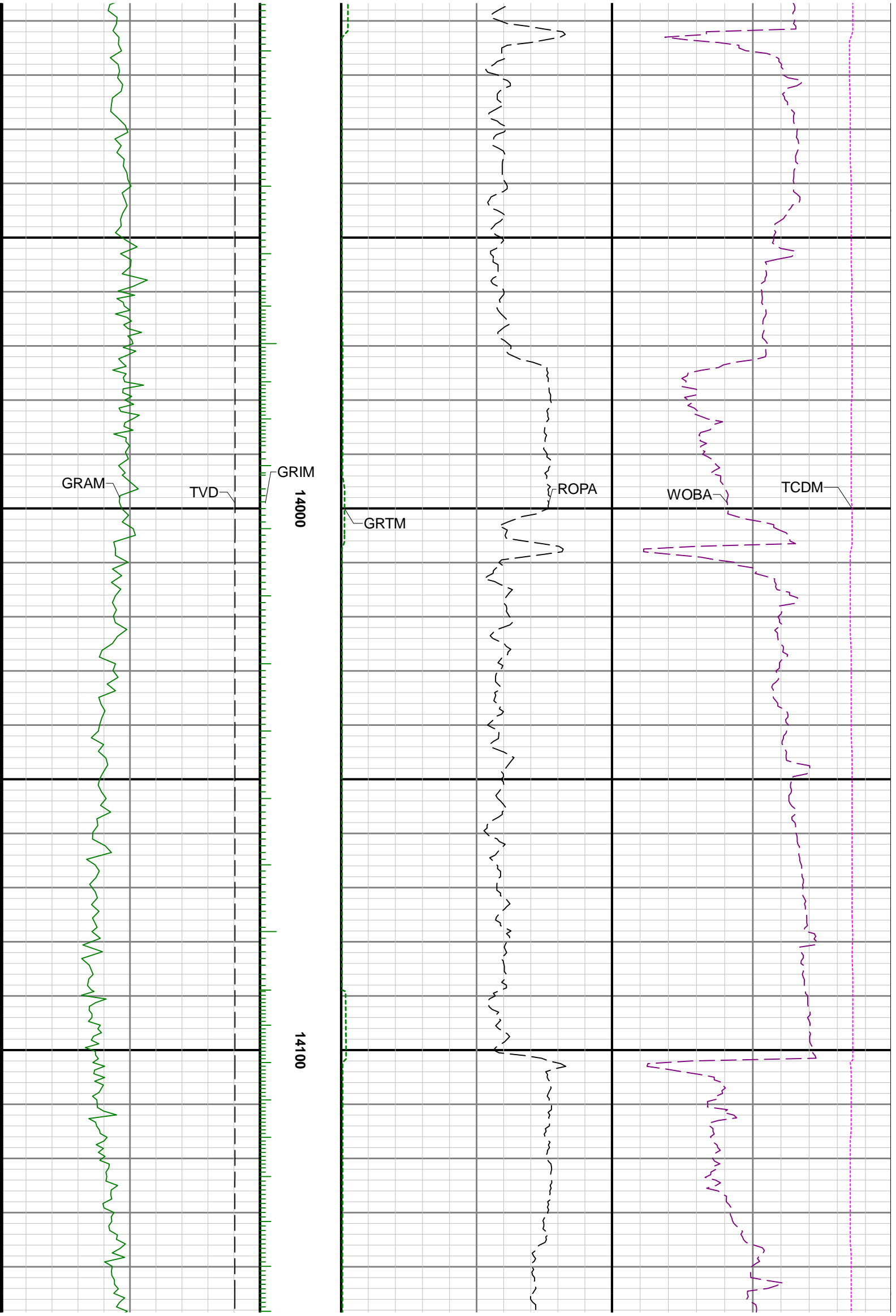


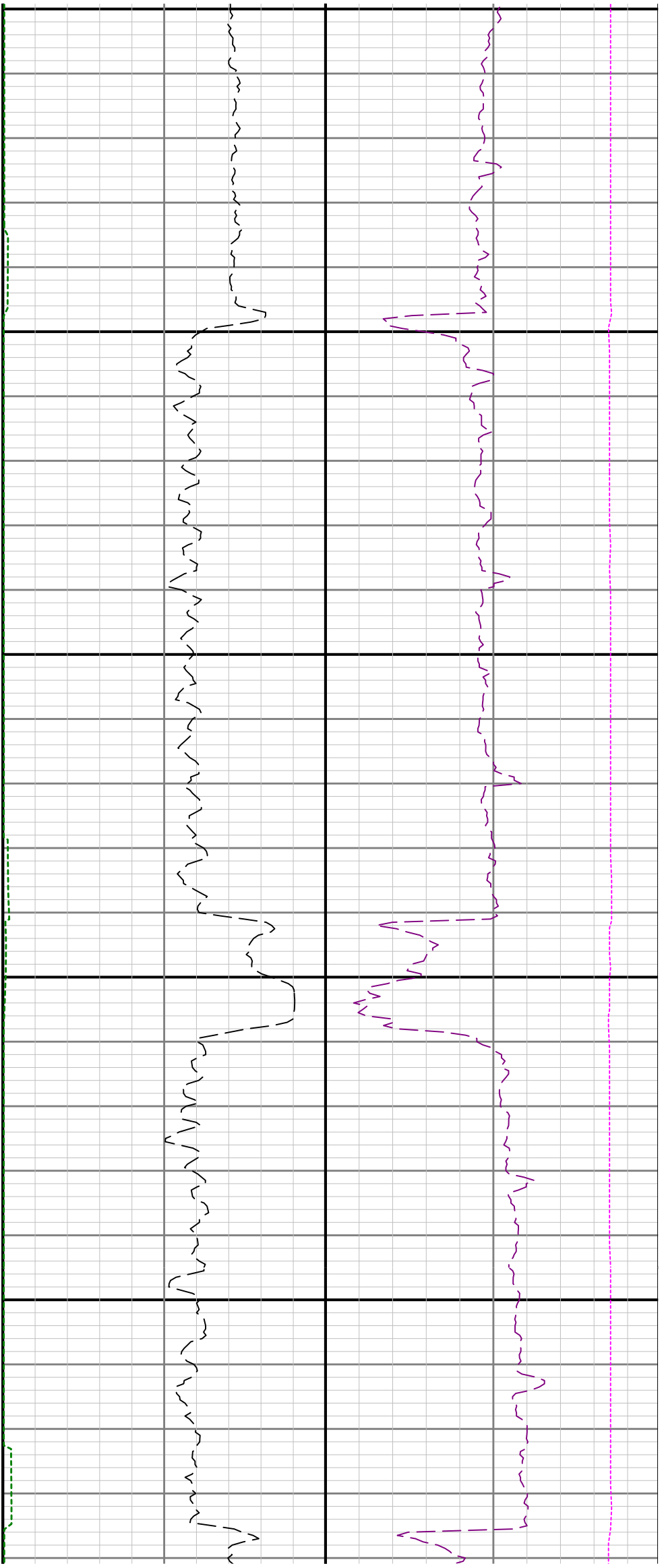
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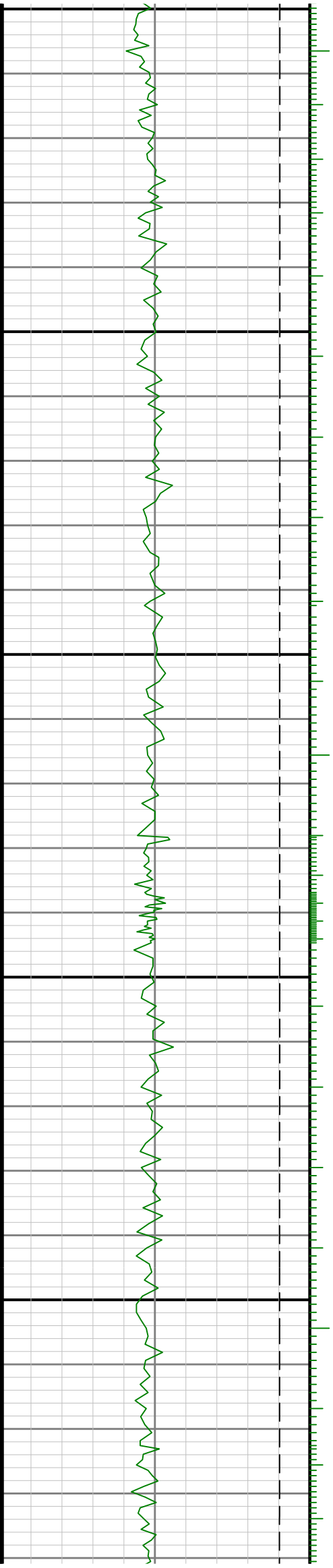


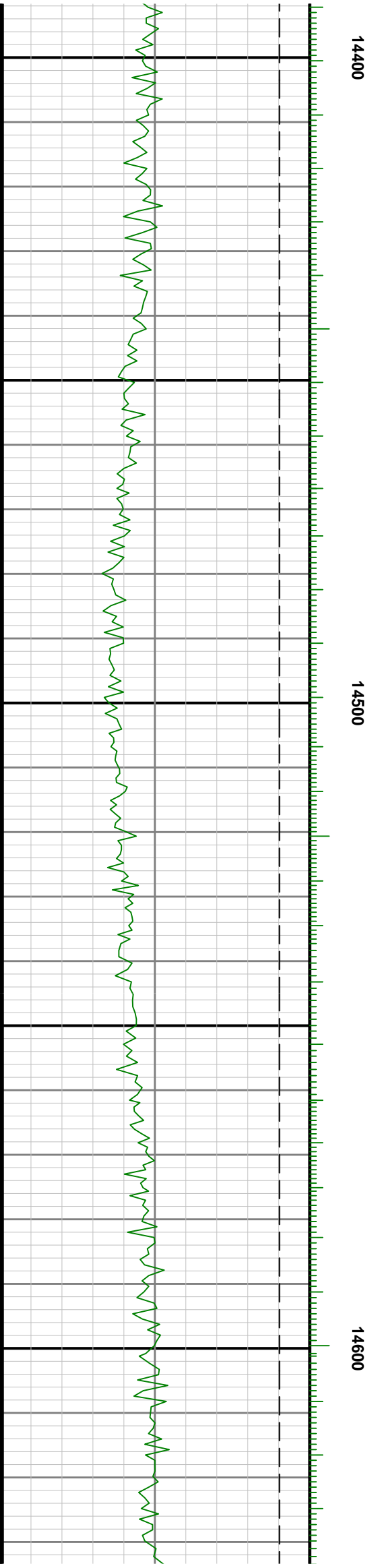
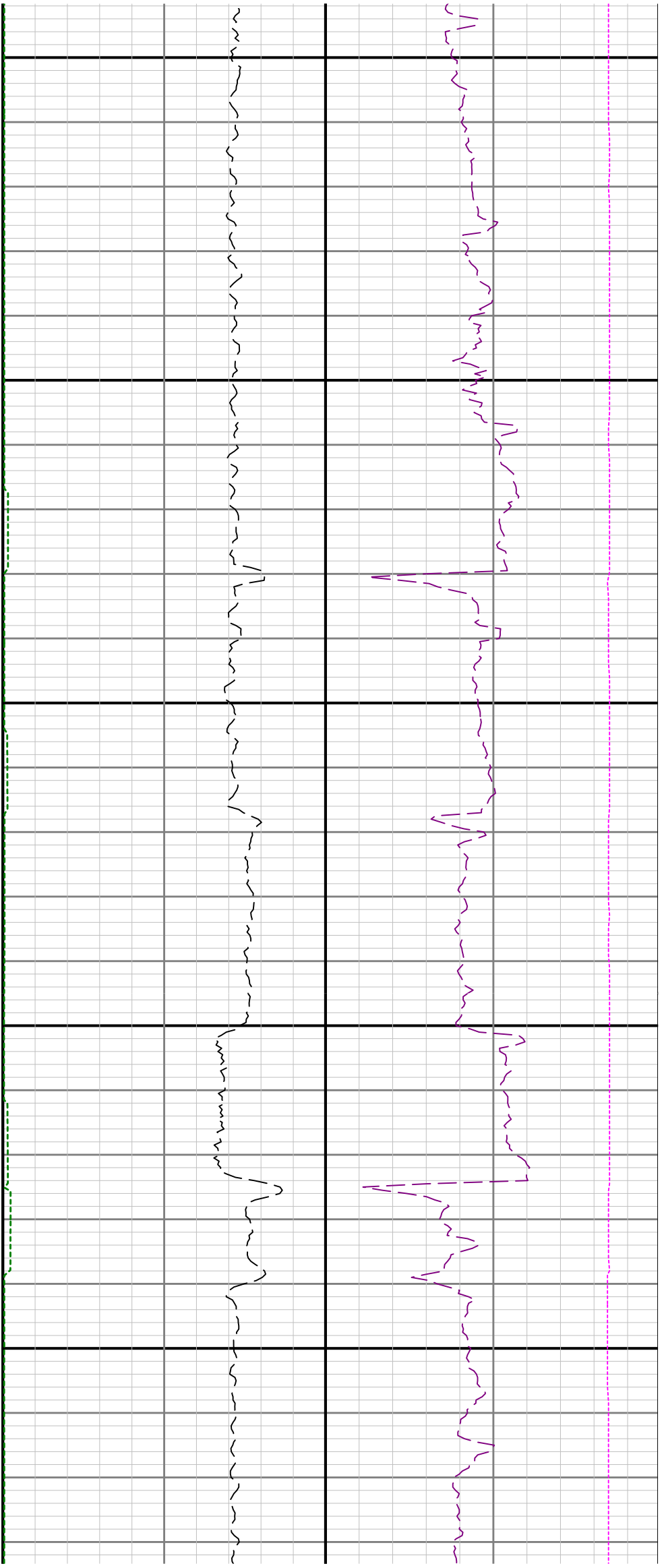


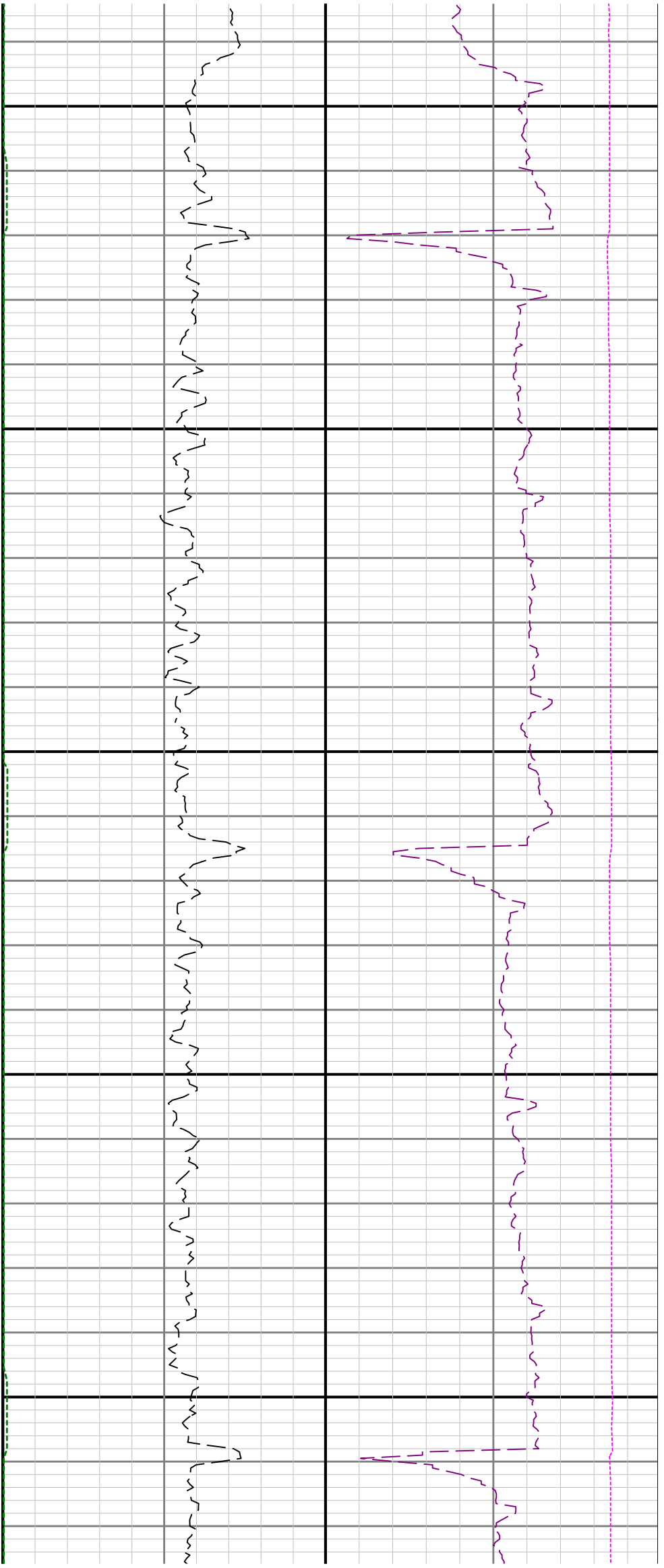


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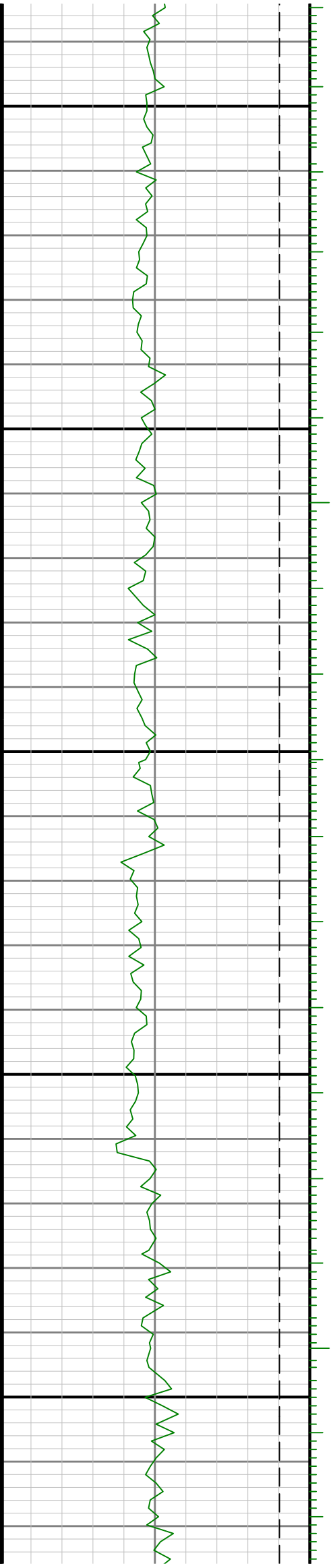


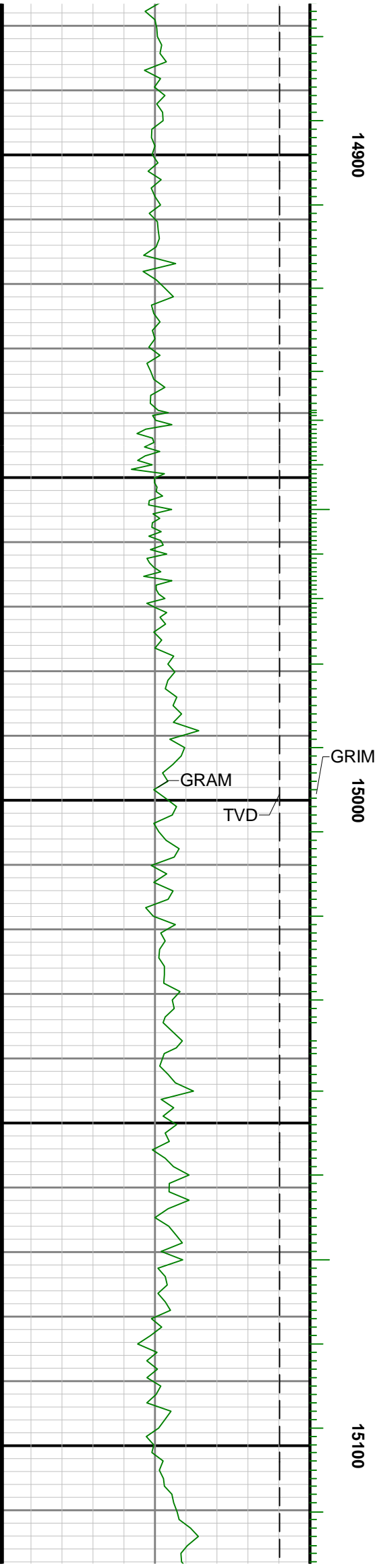
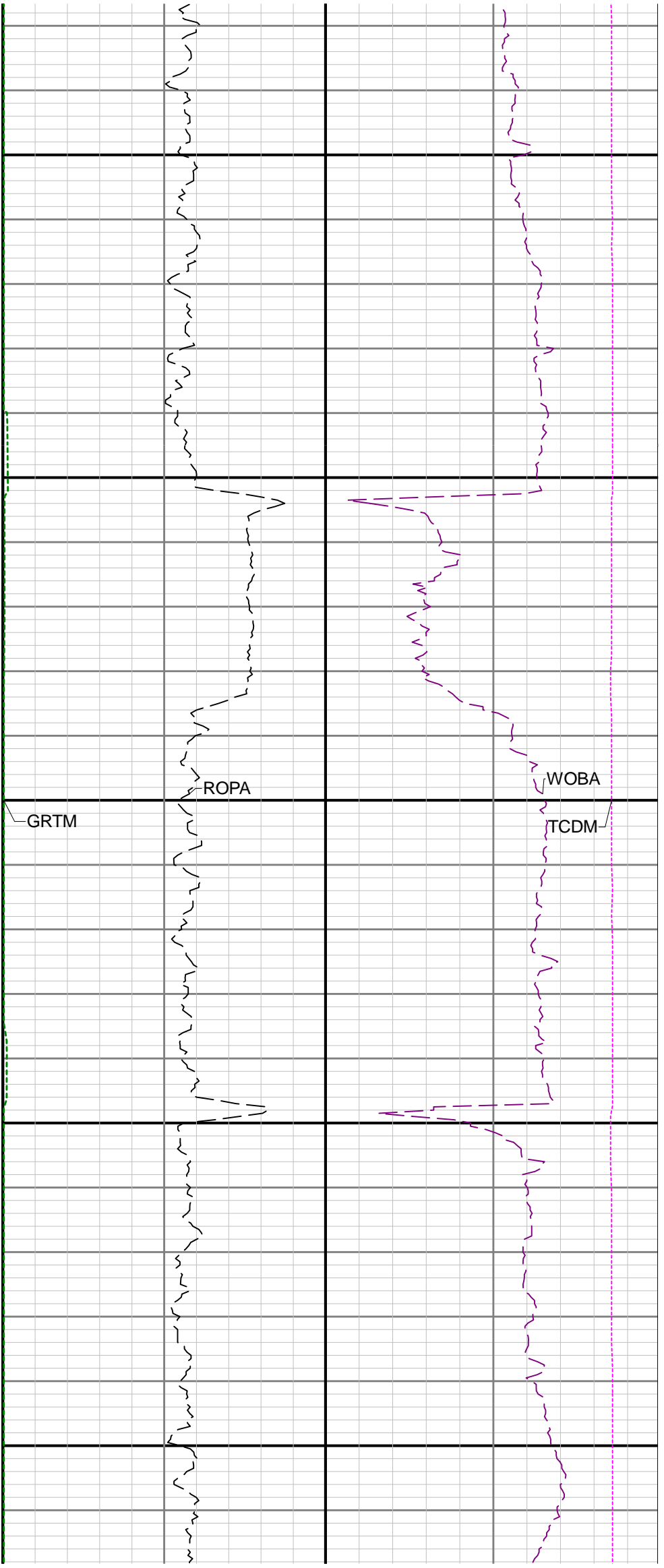


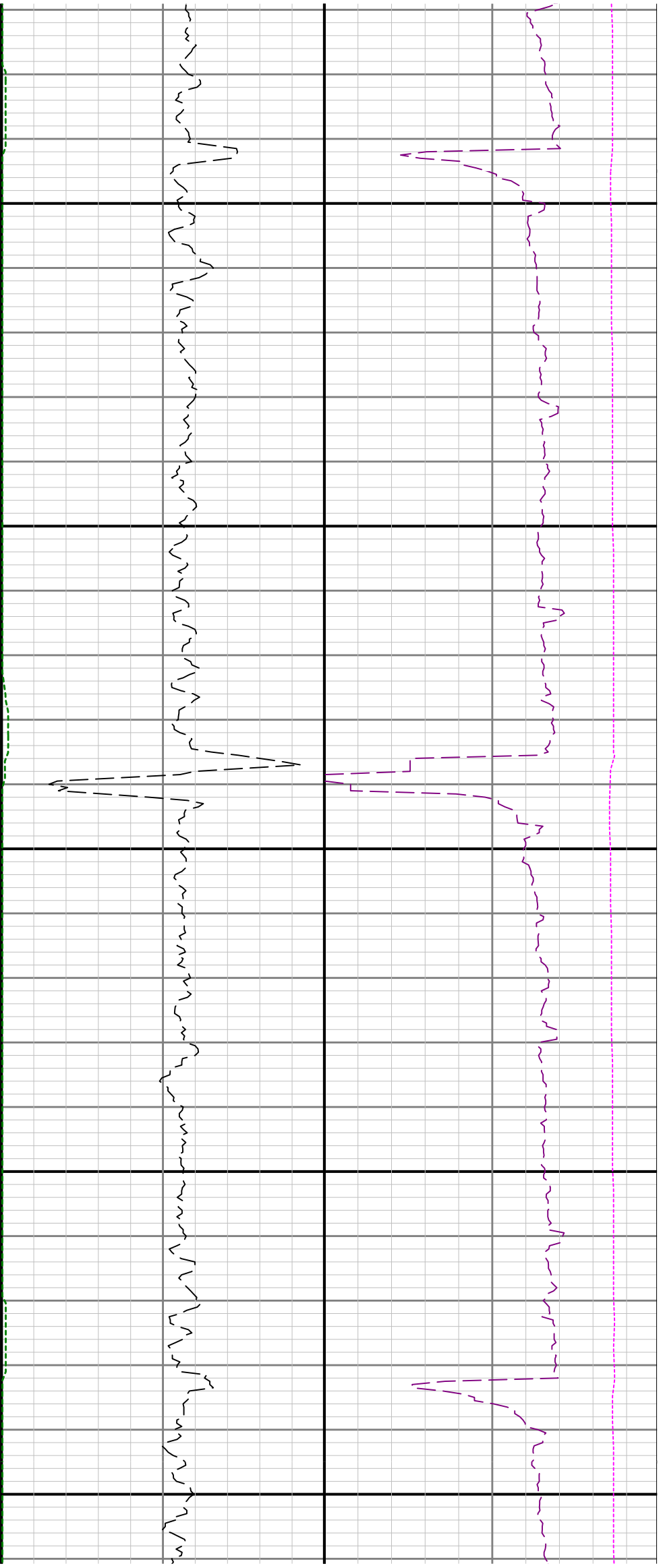


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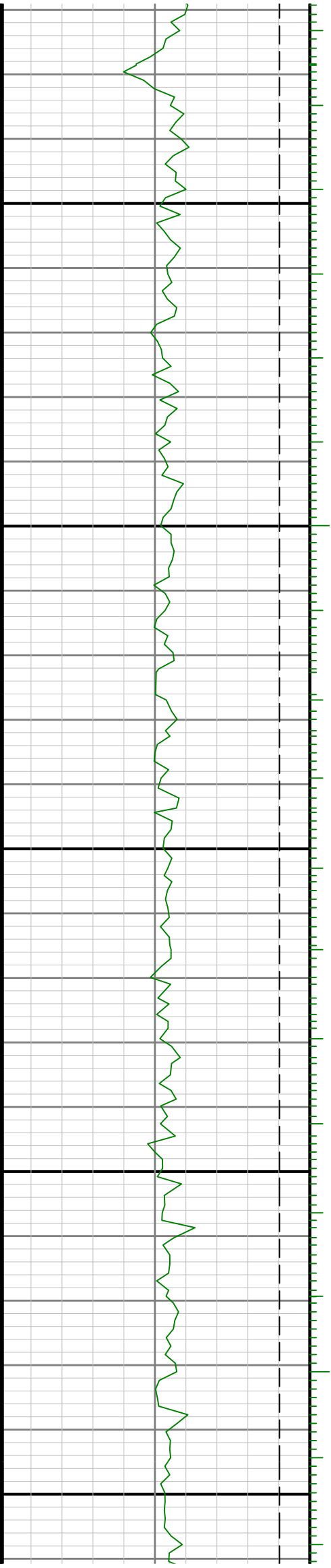


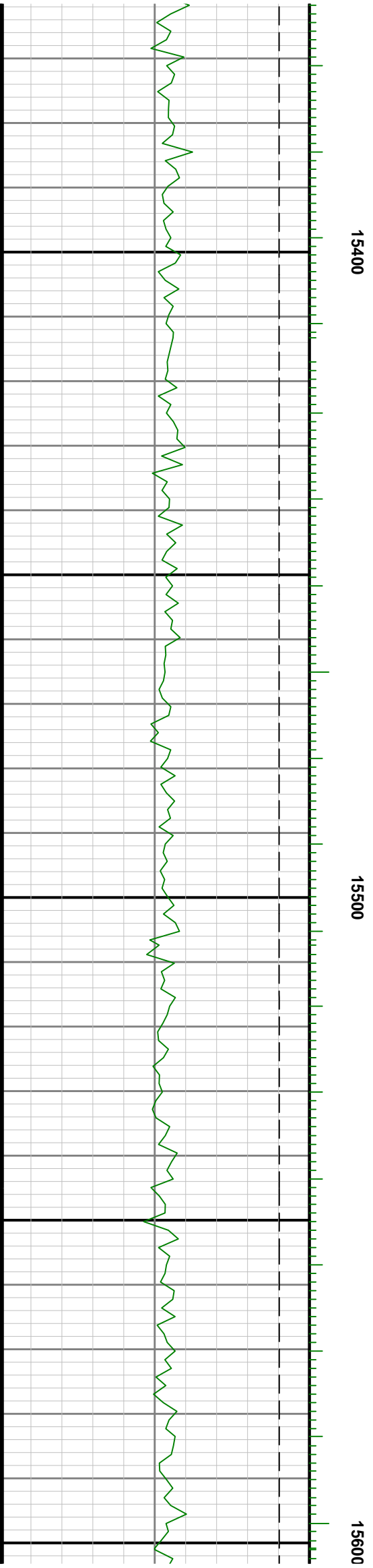
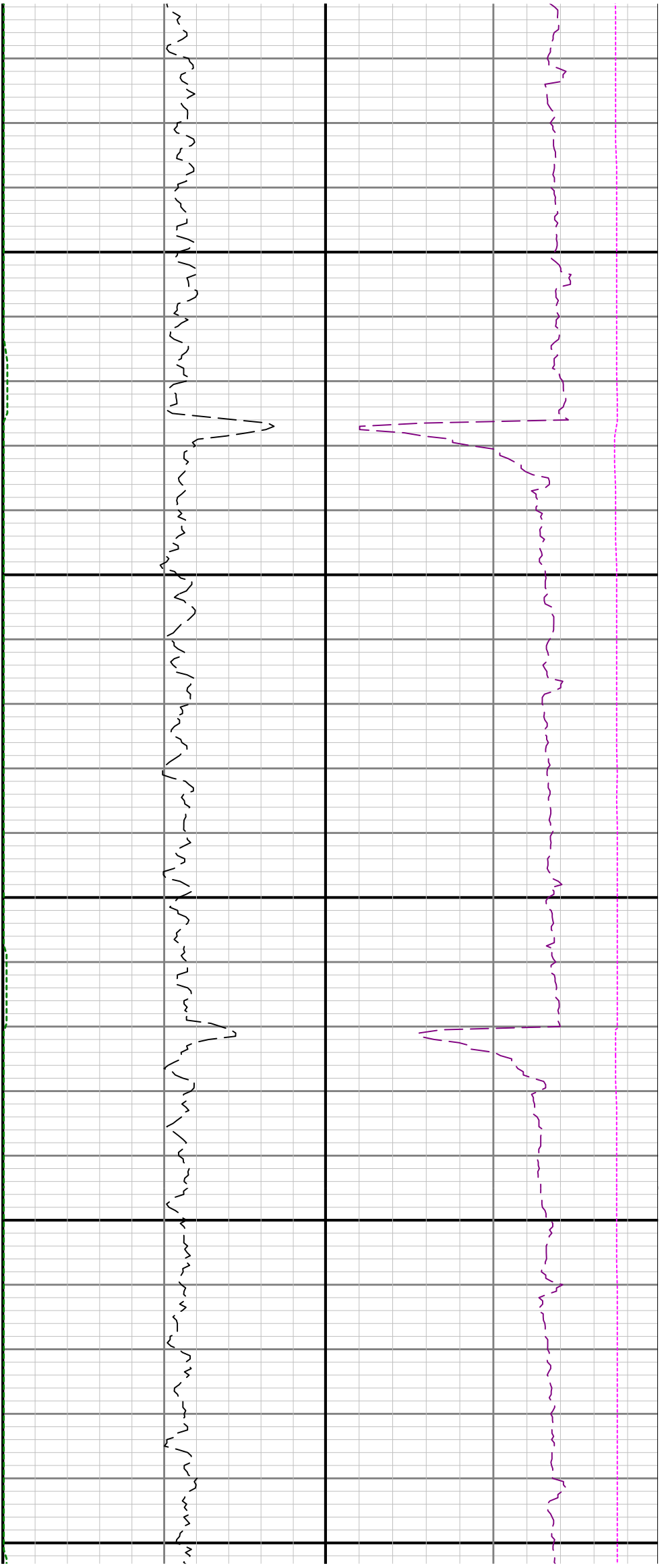




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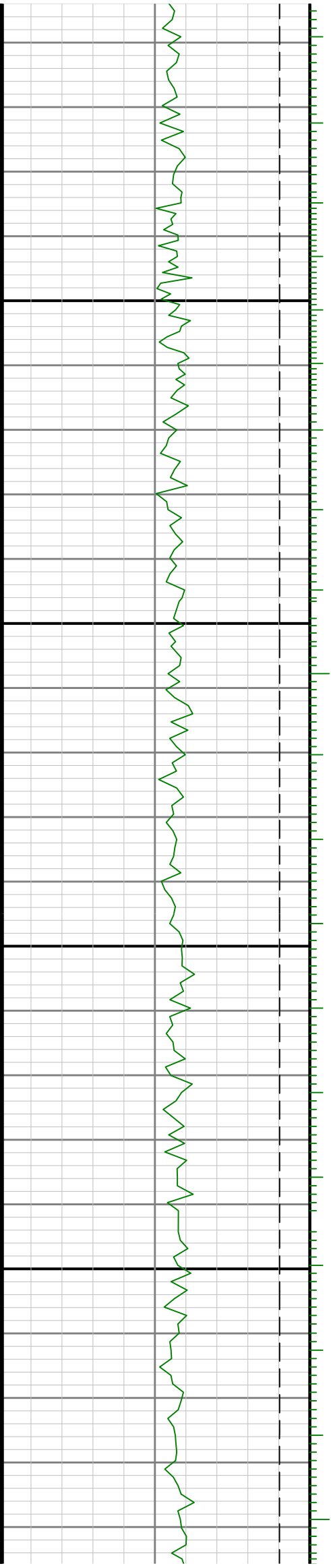


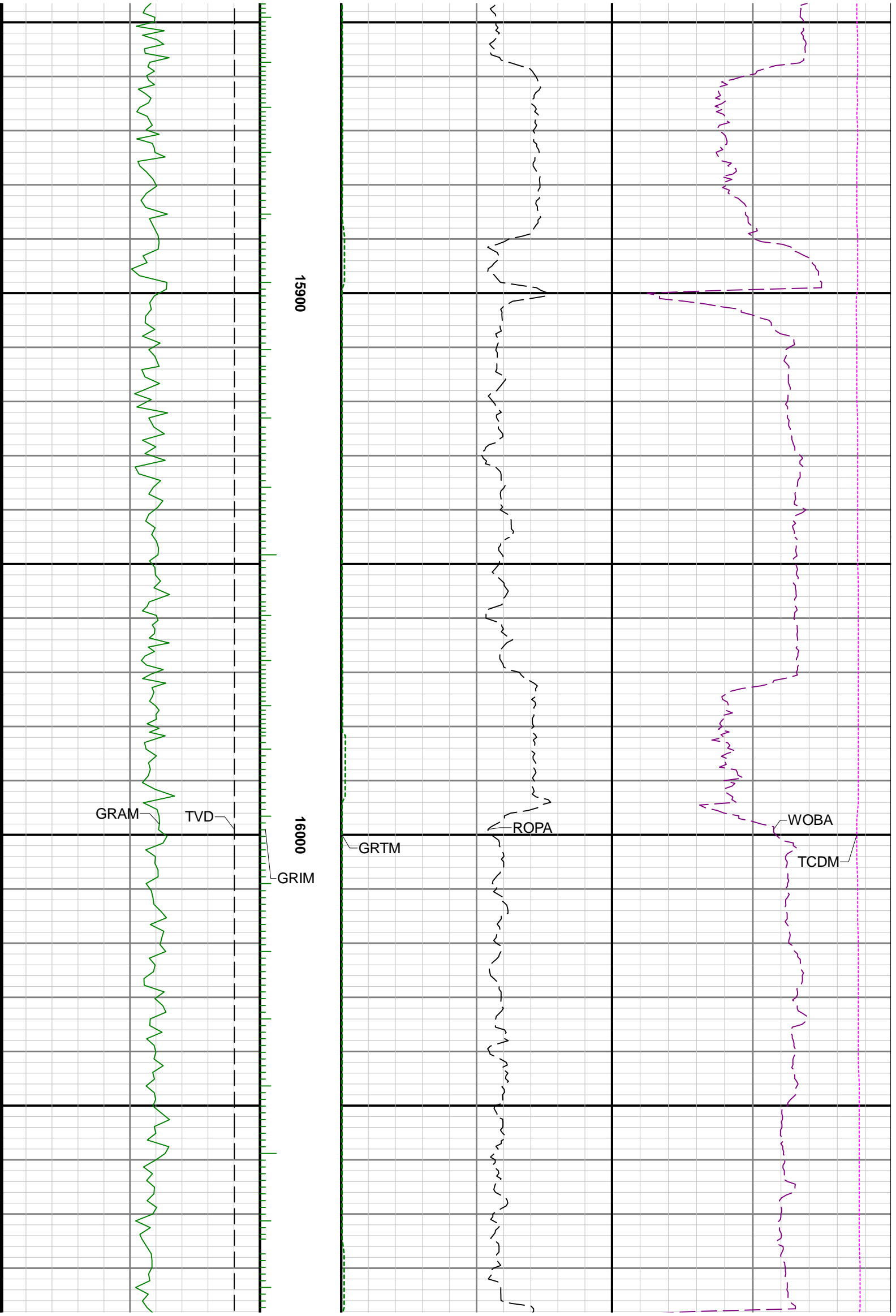


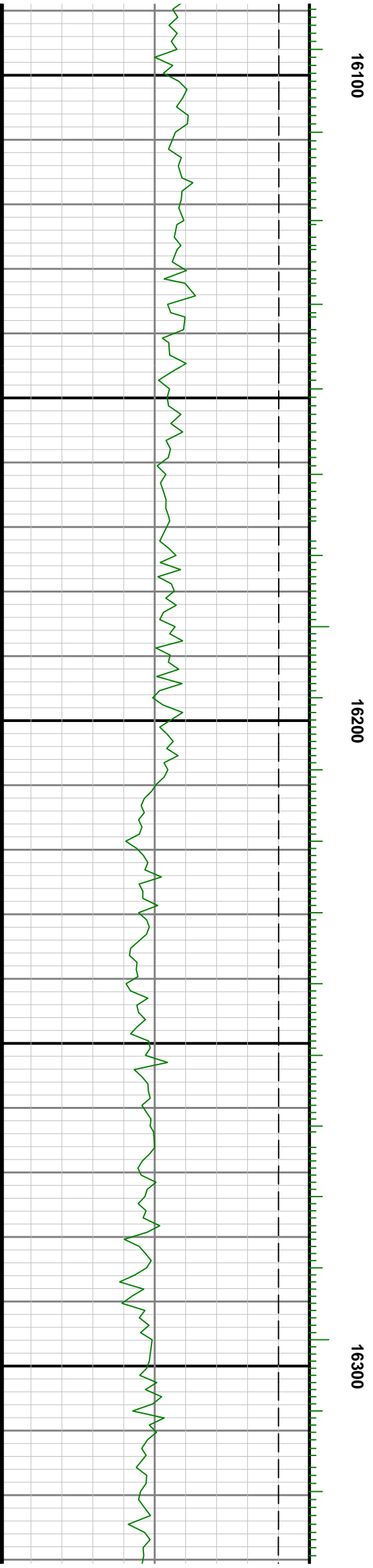
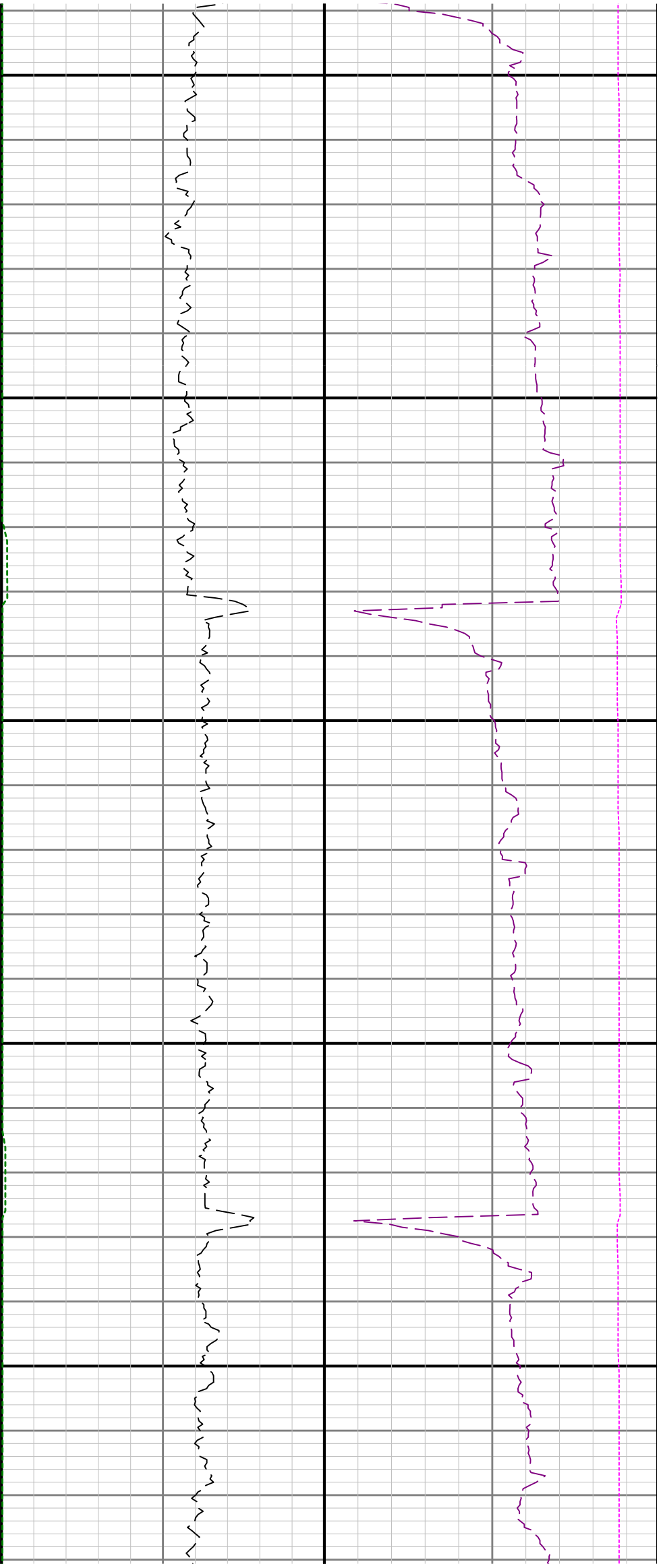


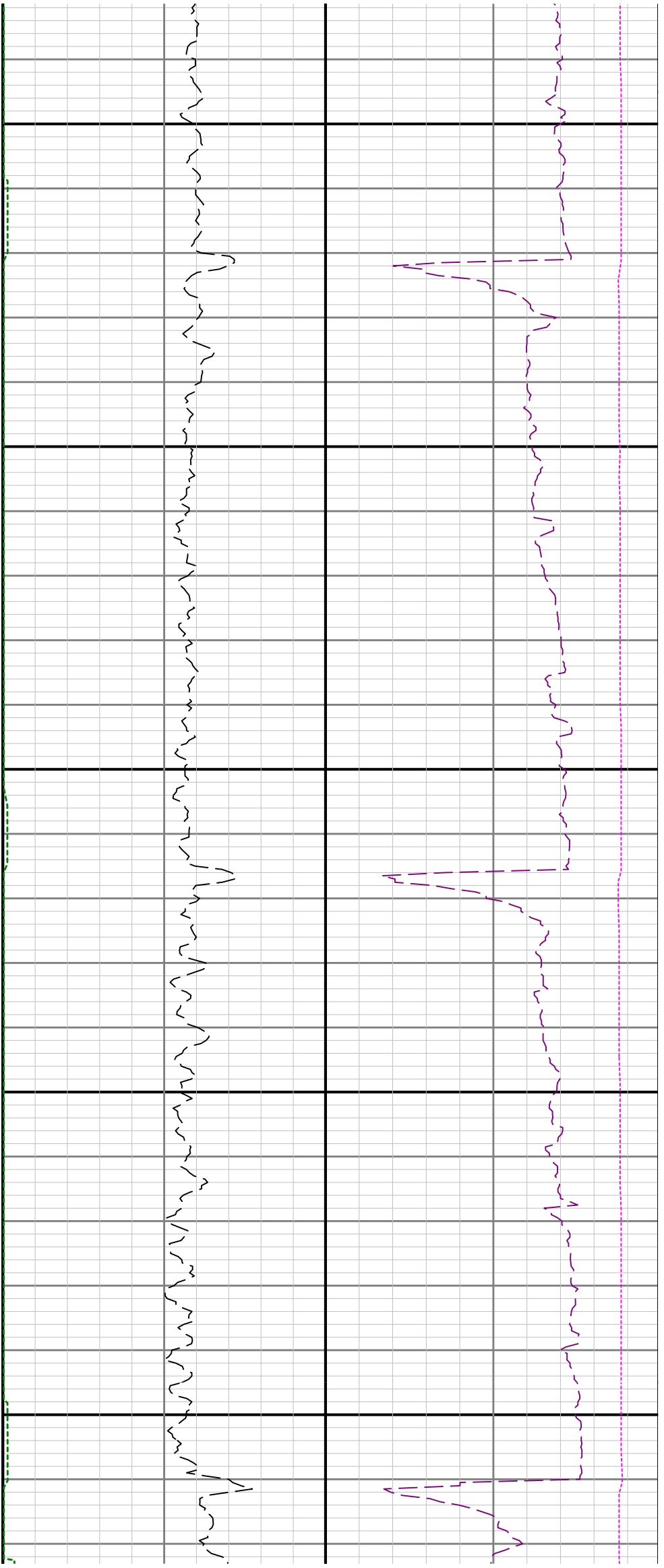
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